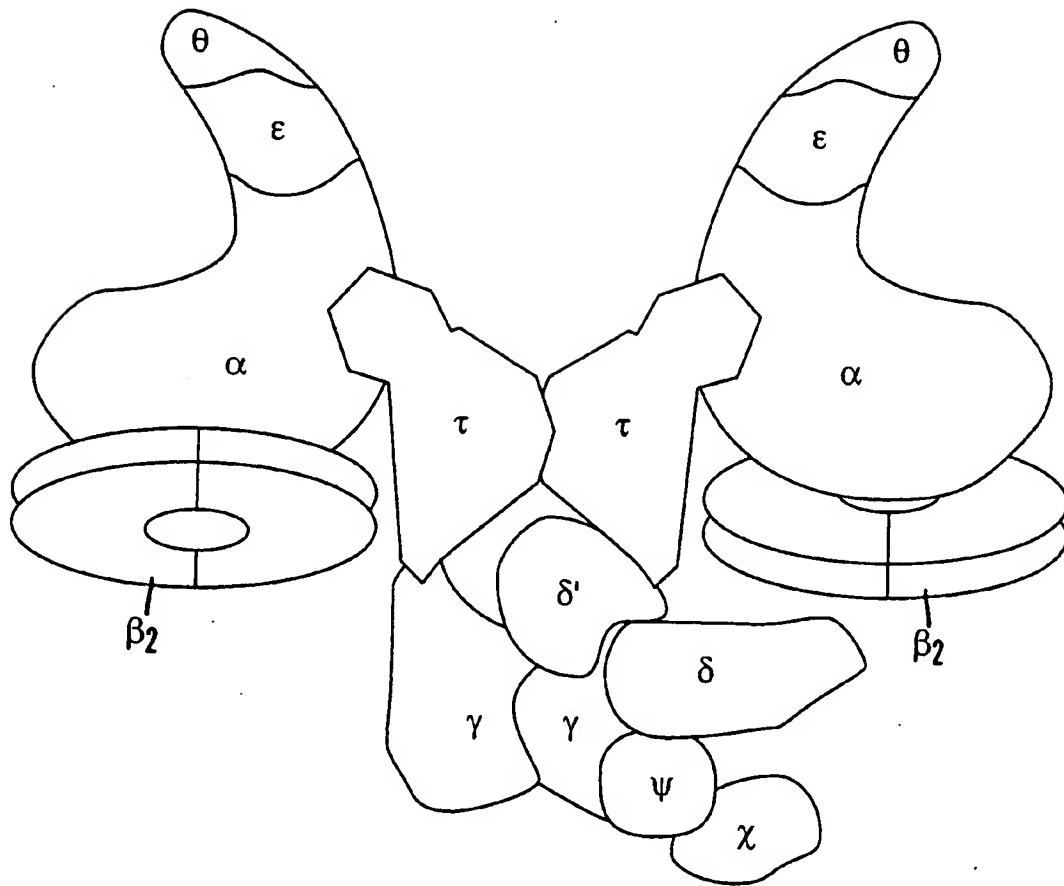


REPLACEMENT  
SHEET

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**FIG. 1**

# REPLACEMENT SHEET

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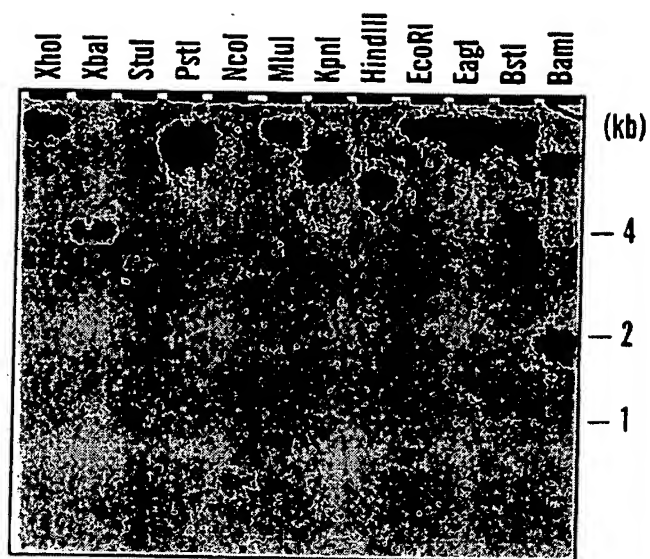
## ATP binding

E. coli	MSYQVLARKWRPQTFADVVGQEHVLTALANGLSLGRIHH <b>HAYLFSGTR</b> GVGKTSIARLLAK
B. subtilis	MSYQALYRVFRPQRFEDVVGQEHITKTLQNALLQKKF <b>SHAYLFSGPR</b> GTGKTSAAKIFAK
	*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
E. coli	GLNCETGITATPCGVCDNCREIEQGRFVDLIEIDAASRTKVEDTRDLLDNVQYAPARGRF
B. subtilis	AVNCEHAPVDEPCNECAACKGITNGSISDVIEIDAASNNGVDEIRDIDKVKFAPSAVTY
	*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
E. coli	KVYLIDEVHMLSRHSFNALL <b>KTLEEPPEH</b> VKFLATDPQKLPVTILSRCLQFHLKALDV
B. subtilis	KVYIIDEVHMLSIGAFNALL <b>KTLEEPPEH</b> CIFILATTEPHKIPLTIISRCQRFDFKRITS
	*** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

FIG. 2

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SHEET

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**FIG. 3**

# REPLACEMENT SHEET

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TCCGGGGGTG	GGGTTCCAG	GTAGACCCCG	GCCCCCTCCCG	TGAGCCCCCTT	TACCCAGGCC	60
GCCACCTCCT	CCAGGGGGGC	CAAGGCGTGC	AAGGAGAGGA	ACGTCCGCAC	<u>CACGCCCTAT</u>	120
ACTAGCCTT	GTG AGC GCC CTC TAC CGC CGC TTC CGC CCC CTC ACC TTC CAG GAG GTG GTG	met ser ala leu tyr arg phe arg pro leu thr phe gln glu val val			<u>S.D.</u>	180 (17)
GGG CAG GAG CAC GTG AAG GAG GAG CCC CTC CTC AAG GCC ATC CGG GAG GGG AGG CTC GCC CAG	gly gln glu his val lys glu pro leu leu leu lys ala ile arg glu gly arg leu ala gln				CAC	240 (37)
GCS TAC CTS TTC TCC GGS AC						
GCC TAC CTC TTC TCC GGG CCC AGG GGC GTG GGC AAG ACC ACC ACC GCG AGG CTC CTC GCC	ala tyr leu phe ser gly pro arg gly val val gly lys thr thr thr ala arg leu leu ala					300 (57)
ATG GCG GTG GGG TGC CAG GGG GAA GAC CCC CCT TGC GGG GTC TGC CCC CAC TGC CAG GCG	met ala val gly cys gln gly glu asp pro pro cys gly val cys pro his cys gln ala					360 (77)
GtG CAG AGG GGC GCC CAC CCG GAC GTG GTG GAC ATT GAC GCC AGC AAC AAC TCC GTG	val gln arg gly ala his pro asp val val asp ile asp ala ala ser asn ser val					420 (97)
GAG GAC GTG CGG GAG CTG AGG GAA AGG ATC CAC CTC GCC CCC CTC TCT GCC CCC AGG AAG	glu asp val arg glu leu arg glu arg ile his leu ala pro leu ser ala pro arg lys					480 (117)
GTC TTC ATC CTG GAC GAG GCC CAC ATG CTC TCC AAA AGC GCC TTC AAC GCC CTC CTC AAG	val phe ile leu asp Glu ala his met leu ser lys ser ala phe asn ala leu leu lys				<sup>C</sup>	540 (137)

FIG. 4A-1

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**FIG. 4A-2**

# REPLACEMENT SHEET

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GAG CGC CTC GCC CGC CGC TCC GAC GCC TTA AGC CTG GAG GTG GCC CTC CTG GAG GCG GGA	1140 (337)
glu arg leu ala arg arg ser asp ala leu ser leu glu val ala gly	
AGG GCC CTG GCC GAG GCC CTA CCC CAG CCC ACC GGC GCT CCT TCC CCA GAG GTC GGC	1200 (357)
arg ala leu ala ala glu ala leu pro gln pro thr gly ala pro ser pro glu val gly	
CCC AAG CCG GAA AGC CCC ACC CCG GAA CCC CCA AGG CCC GAG GAG CCC GAC CTG	1260 (377)
pro lys pro glu ser pro pro thr pro pro arg pro glu ala pro asp leu	
CGG GAG CGG TGG CGG GCC TTC CTC GAG GCC GGC ACC CTA CGG GCC TTC GTG CGG	1320 (397)
arg glu arg trp arg ala phe leu glu ala leu arg pro thr leu arg ala phe val arg	
GAG GCC CGC CGG GAG GTC CGG GAA GGC CAG CTC TGC CTC GCT TTC CCC GAG GAC AAG GCC	1380 (417)
glu ala arg pro glu val arg arg glu gly gln leu cys leu ala phe pro glu asp lys ala	
TTC CAC TAC CGC AAG GCC TCG GAA CAG AAG GTG AGG CTC CTC CCC CTC GCC CAG GCC CAT	1440 (437)
phe his tyr arg lys ala ser glu gln lys val arg leu leu pro leu ala gln ala his	
TTC GGG GTG GAG GAG GTC GTC CTC GTC CTC GAG GAA AAA AAA AGC CTG AGC CCA AGG	1500 (457)
phe gly val glu glu val val val val lys lys ser leu ser pro arg	

frameshift site

**FIG. 4B-1**

# REPLACEMENT SHEET

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CCC CGC CCG GCC CCA CCT CCT GAA GCG CCC GCA CCC CCG GGC CCT CCC GAG GAG GAG GTA	1560 (477)
pro arg pro ala pro pro pro pro ala pro pro pro gly pro pro pro glu glu val	
GAG GCG GAG GAA GCG GCG GAG GAG GCC CCG GAG GAG GAG GAG GTC CGC CTC	1620 (497)
glu ala glu glu ala ala glu glu pro pro ala leu arg arg val val arg leu	
CTG GGG GGG CCG GTG CTC TGG GTG CCG CCG CCG CCG GAG GCG CCG GAG GAG GAA	1680 (517)
leu gly gly arg val leu trp val arg arg pro arg thr arg glu ala pro glu glu	
CCC CTG AGC CAA GAC GAG ATA GGG GGT ACT GGT ATA <b>TAA</b> TGGGGGCGCATG	1740 (529)
pro leu ser gln asp glu ile gly thr gly ile *	
CGACCTCGGA CAAGAGACCG TGGACAACAT CCTCAAGCGC CTCCGCCCGTA	1820
GGTGCGGGGG CTCCAGAAGA TGGTGGCCGA GGGCCGCCCC TGCACGAGG	1880
GATGACCGCC ACCAAGAAG CCATGGAGGC GGCGGCCACC CTGATCCTCC	1940
GAACGTCTGC GCCGCCGAGG TCTCCGAGGG CAAGGTGAAC CCCAAGAAGC	2000
CGCCACCATG CTGAAGAACT TCATCTA	2027

**FIG. 4B-2**

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**FIG. 4C**



# REPLACEMENT SHEET

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Met	ser	ala	leu	leu	tyr	arg	arg	phe	arg	pro	leu	thr	phe	gln	glu	val	val	gly	gln	glu	20
his	val	lys	glu	pro	arg	leu	lys	ala	ile	arg	thr	glu	gly	arg	leu	ala	gln	ala	tyr	leu	40
phe	ser	gly	pro	arg	gly	val	gly	pro	lys	thr	thr	thr	ala	arg	leu	ala	met	ala	val		60
gly	cys	gln	gly	pro	asp	pro	pro	asp	ile	cys	val	cys	pro	his	cys	gln	ala	val	gln	arg	80
gly	ala	his	pro	arg	glu	asp	val	val	asp	ala	ala	ala	ser	asn	asn	ser	val	glu	asp	val	100
arg	glu	leu	arg	ala	his	ile	leu	his	leu	ala	pro	leu	ser	ala	pro	arg	lys	val	phe	ile	120
leu	asp	glu	ala	ala	his	met	leu	ser	lys	ser	ala	phe	asn	ala	leu	leu	lys	thr	leu	glu	140
glu	pro	pro	pro	pro	his	val	leu	phe	leu	ala	ala	thr	thr	arg	leu	glu	arg	met	pro	pro	160
thr	ile	leu	ser	arg	arg	thr	gln	his	val	phe	arg	arg	arg	glu	leu	glu	glu	ile	ala	ala	180
phe	lys	leu	arg	arg	leu	ile	leu	asp	gly	ala	val	gly	arg	ala	glu	glu	glu	ala	leu	leu	200
leu	leu	ala	arg	leu	ala	ala	ala	asp	gly	ala	leu	arg	glu	ala	glu	ser	leu	glu	arg	phe	220
leu	thr	gly	val	arg	gly	pro	leu	thr	arg	lys	glu	val	glu	arg	ala	leu	gly	ser	pro	pro	240
gly	leu	ala	arg	arg	glu	glu	leu	ile	ala	ser	leu	ala	arg	gly	lys	thr	ala	glu	ala	leu	260
leu	glu	val	arg	phe	arg	glu	leu	tyr	gly	glu	tyr	ala	pro	arg	ser	leu	val	ser	gly	leu	280
ala	pro	pro	gln	ala	ala	leu	ile	ala	ala	met	thr	ala	phe	gly	leu	ala	gly	thr	pro	pro	300
ala	arg	arg	ser	asp	ala	leu	ala	leu	ser	leu	glu	val	ala	leu	asp	glu	ala	met	glu	arg	320
ala	ala	glu	ala	leu	pro	ala	pro	gln	leu	thr	gly	ala	pro	ser	pro	glu	ala	gly	arg	ala	340
glu	ser	pro	pro	thr	pro	pro	glu	pro	pro	arg	pro	glu	glu	ala	pro	glu	val	gly	pro	lys	360
trp	arg	ala	phe	leu	glu	ala	ala	leu	arg	pro	thr	leu	arg	ala	phe	val	asp	leu	arg	glu	380
pro	glu	val	arg	glu	gly	gln	lys	val	arg	leu	ala	phe	pro	glu	asp	lys	val	arg	glu	ala	400
arg	lys	ala	ser	glu	glu	gln	lys	val	arg	leu	leu	ala	pro	leu	ala	gln	ala	phe	his	tyr	420
glu	glu	val	val	leu	val	leu	leu	glu	gly	glu	lys	lys	ser	leu	ser	pro	arg	phe	gly	val	440
ala	pro	pro	pro	glu	ala	ala	pro	ala	pro	pro	gly	gly	pro	pro	glu	glu	arg	pro	arg	pro	460
glu	ala	ala	glu	glu	ala	ala	pro	glu	pro	glu	ala	val	arg	val	glu	val	glu	ala	ala	glu	480
arg	val	leu	trp	val	arg	val	arg	arg	thr	arg	ala	arg	arg	val	val	arg	leu	leu	gly	gly	500
gln	asp	glu	ile	gly	gly	thr	arg	thr	arg	thr	arg	glu	ala	pro	glu	glu	glu	pro	leu	ser	520
																				529	

FIG. 4D

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**FIG. 4E**

# REPLACEMENT SHEET

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Met his phe gly gly arg leu thr phe gln glu val ala gln ala val gln arg 20  
 his val ser ser gly gln his leu pro pro arg leu thr phe gln glu val ala gln ala val gln arg 40  
 phe ser gly cys gln his pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 60  
 gly ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 80  
 arg glu asp glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 100  
 leu asp pro ile leu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 120  
 glu pro ile leu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 140  
 thr phe lys leu ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 160  
 phe leu leu ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 180  
 leu leu thr glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 200  
 gly thr leu glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 220  
 gly leu glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 240  
 leu ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 260  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 280  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 300  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 320  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 340  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 360  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 380  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 400  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 420  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 440  
 ala ala pro arg glu val ala arg glu pro arg glu his arg leu thr phe gln glu val ala gln ala val gln arg 454

FIG. 4F

# REPLACEMENT SHEET

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E. coli	MSYQVLARKWRPQTFADVVGQEHVLTALANGLSLGRIHHAYLFSGTRGVGKTSIARLLAK	ATP site	60
H. inf.	.....K.....II.....KDN.L.....F.....		60
B. sub.	....A.Y.VF...R.E.....ITKT.Q.A.LQKKFS.....P.T....A.KIF..		60
C. cres.	DA.T....Y.R..E.LI...AMVRT...AF.T...A.FMLT.V.....TT....R		113
M. gen.	-MH..FYQ.Y..IN.KQTL...SIRKI.V.AINRDKLPNG.I...E.T...TF.KII..		59
T. th.	--VSA.Y.RF..L..QE.....KEP.LKAIRE..LAQ.....P.....TT.....M		58
	Zn <sup>++</sup> finger		
	* * *		
E. coli	GLNCET----		116
H. inf.	....VH-----V.....E.E..KA....N.I.....E.....K.V		116
B. sub.	AV...H-----APVDE..NE.AA.KG.TN.SIS.V.....NNG.DEI..IR.K.KF..S		116
C. cres.	A..Y..DTVK.PSVDLTTEGYH..S.IE..HM.VL.L.....DEM.E...G.R...V		173
M. gen.	AI..LN-----WDQIDV.NS..V.KS.NTNSAI.IV.....KNGIN.I.E.VE..FNH.F		115
T. th.	AVG.QG-----EDP.....PH.QAVQR.AHP.VVD.....NNS...V.E.ERIH..L		112
E. coli	RGRFKVYLIDEVHMLSRHSFNALLKTLLEPPPEHVKFLLATDPQKLPVTILSRCLQFHLK		176
H. inf.	V.....I.....IGA.....CI.I...E.H.I.L.I...QR.DF.		176
B. sub.	EA.Y...I.....TAA.....P.A..IF...EIR.V.....QR.D.R		233
C. cres.	TFKK...IL..A...TTQ.WGG.....S.PY.L.IFT..EFN.I.L.....QS.FF.		175
M. gen.	SAPR..FIL..A...KSA.....P..L.VF...E.ERM.P.....TQH.RFR		172
T. th.			

FIG. 5A

# REPLACEMENT SHEET

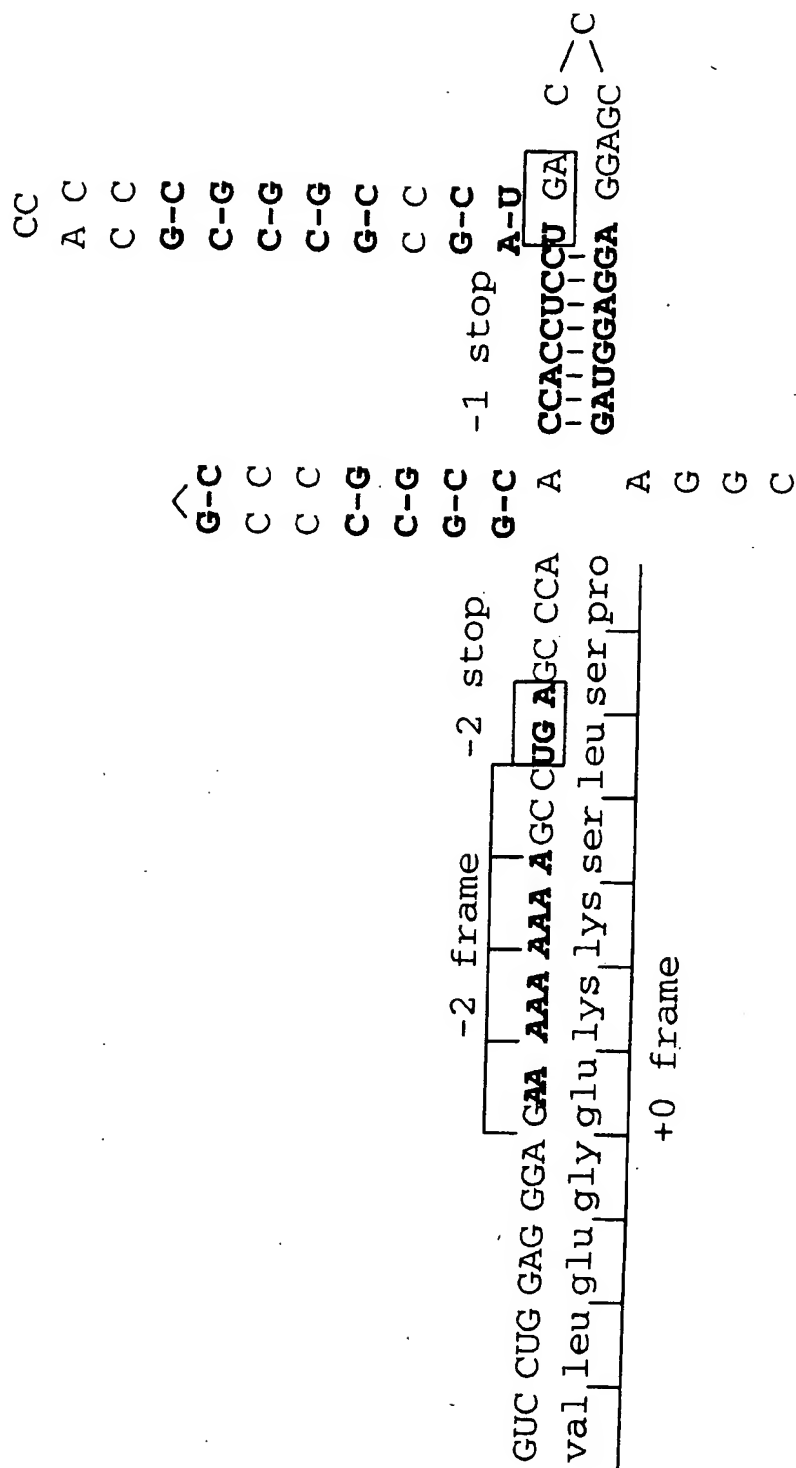
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E. coli	ALDVEQIRHQLEHILNEEHIAHEPRALQLLARAAGEGSLRDALSLTDQAIASGDGQ--VST	234
H. inf.	...ET..SQH.A...TQ.N.PF.DP..VK..K..Q..I..S.....M..R.--.TN	234
B. sub.	RITSQA.VGRMNK.VDA.QLOV.EGS.EII.S..H.GM.....L....SFSGDI--LKV	234
C. cres.	RVEPDVLVKHFDR.SAK.GARI.MD..A.I.....V..G..L....VQTERGQT.TS	293
M. gen.	KITSDL.LER.ND.AKK.K.KI.KD..IKI.DLSQ.....G..L..LAI.LIVKKL.LL	235
T. th.	R.TE.E.AFK.RR..EAVGREAA.EE..L....L.D.A....E..LERFLLLEGP---LTR	229
E. coli	QAVSAMLGTLDDDDQALSLVEAMVEANGERVMAINEAAARGIEWEALLVEMGLLHRIAM	294
H. inf.	NV..N...L...NYSVDILY.LHQG...LL.RTLQRV.DAAGD.DK..G.CAEK...Q..L	294
B. sub.	EDALLIT.AVSQLYIGK.AKSLHDK.VSDALETLL.LLQQ.KDPKAK.IED.IFYFRDMLL	294
C. cres.	TV.RD...LA.RS.TIA.Y.HVMAGKTKDALEGFRALWGF:ADPAVVMLDV.DHC.AS.V	353
M. gen.	MLKKHLISLIEMQNL.L.KQFYQ.I	260
T. th.	KE.ERA..SPPGTGVAEIAASLARGKTAEALG.ARRLYGE.YAPRS.VSGL.EVFRGLY	289

FIG. 5B

# REPLACEMENT SHEET

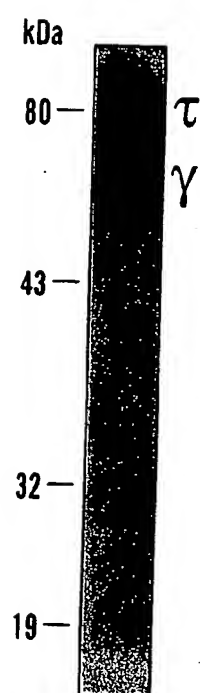
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**FIG. 6**

REPLACEMENT  
SHEET

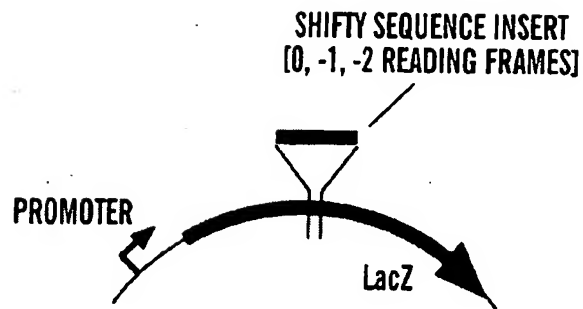
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**FIG. 7**

REPLACEMENT  
SHEET

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**FIG. 8A**

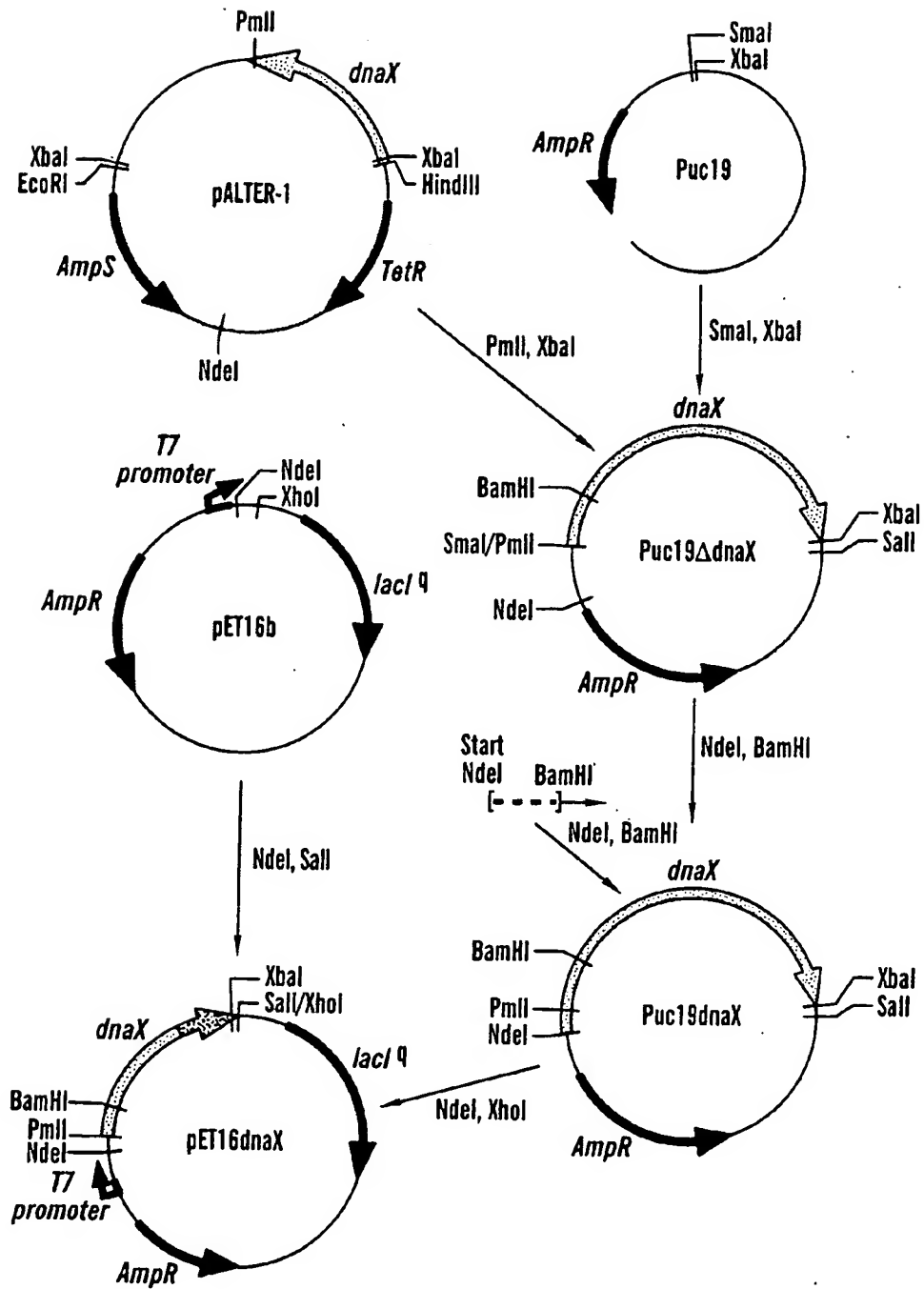
	READING FRAME	BLUE	WHITE
SHIFTY SEQUENCE	0	+	
	-1	+	
	-2	+	
MUTANT SEQUENCE	0	++	
	-1		+
	-2		+

**FIG. 8B**



# REPLACEMENT SHEET

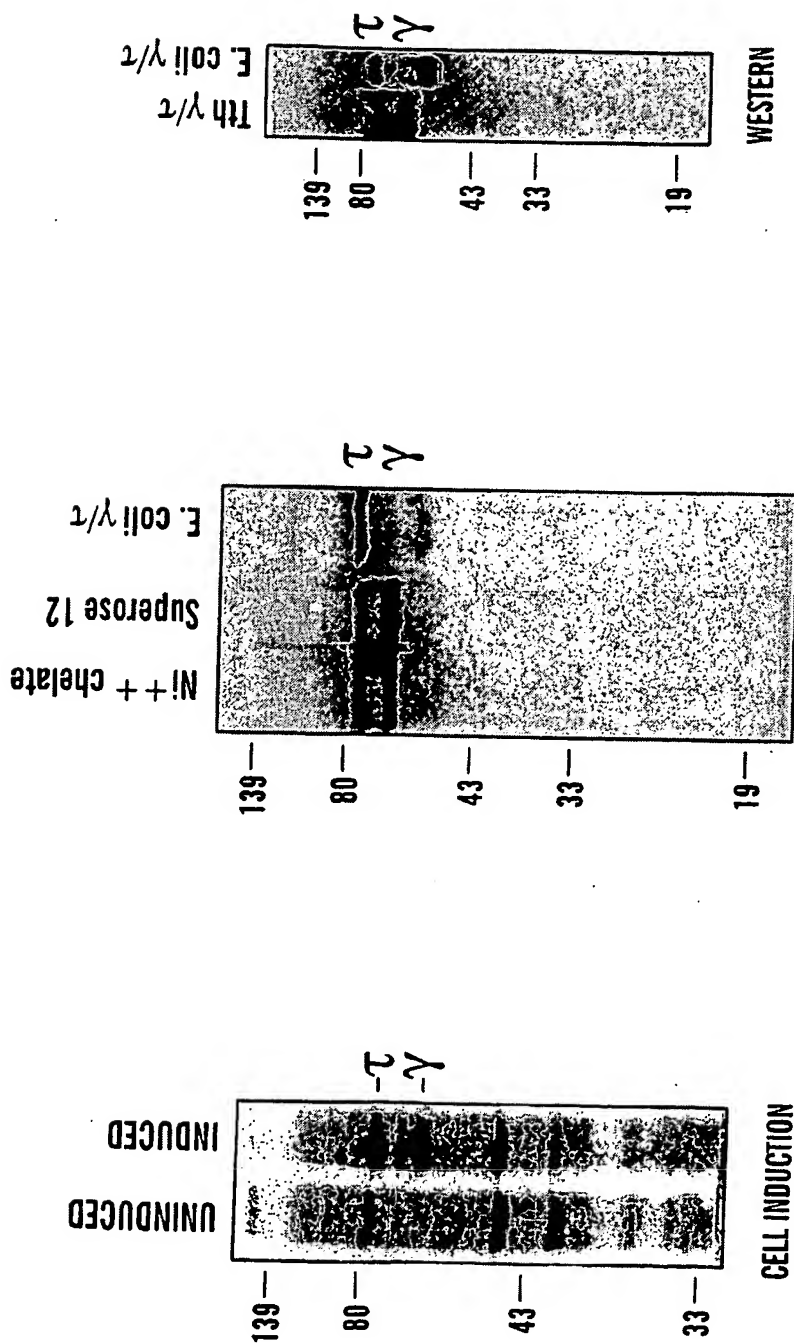
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**FIG. 9**

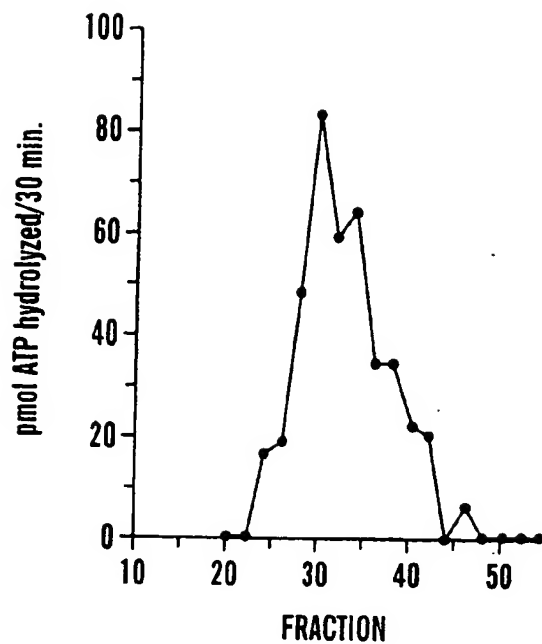
# REPLACEMENT SHEET

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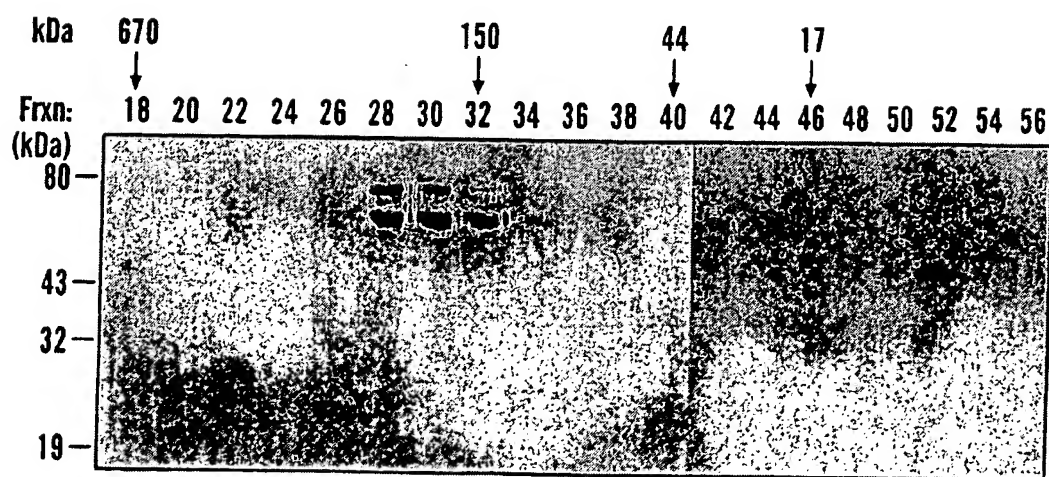


REPLACEMENT  
SHEET

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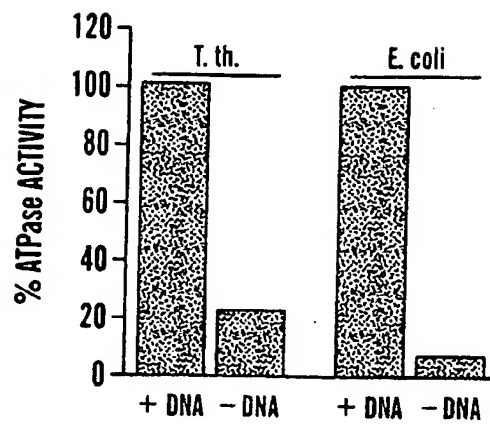
**FIG. 11A**



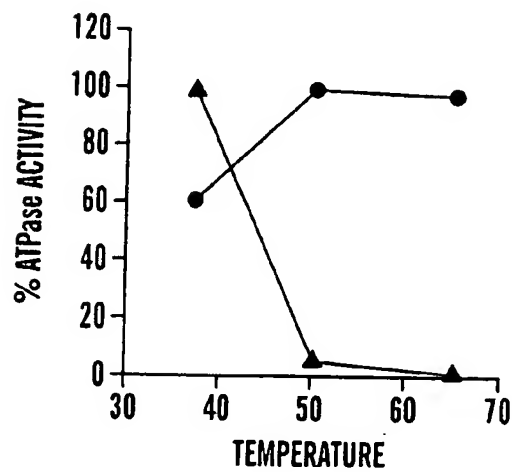
**FIG. 11B**

REPLACEMENT  
SHEET

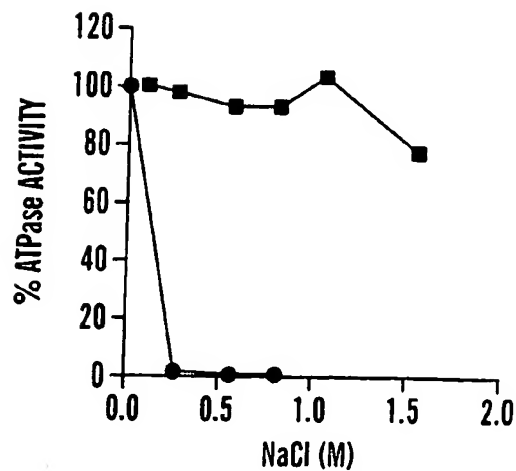
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**FIG. 12A**



**FIG. 12B**

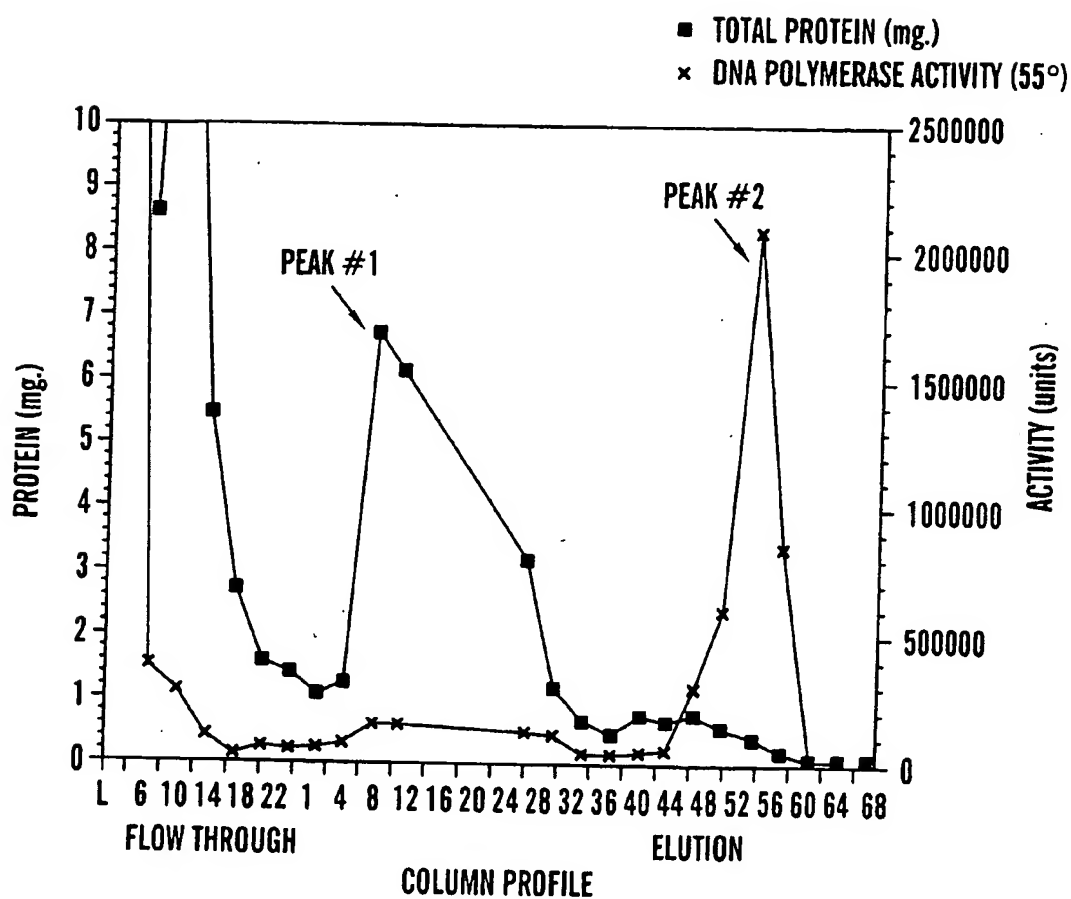


**FIG. 12C**

REPLACEMENT  
SHEET

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**FIG. 13A**



**FIG. 13B**

ATP AGAROSE STEP COLUMN

# REPLACEMENT SHEET

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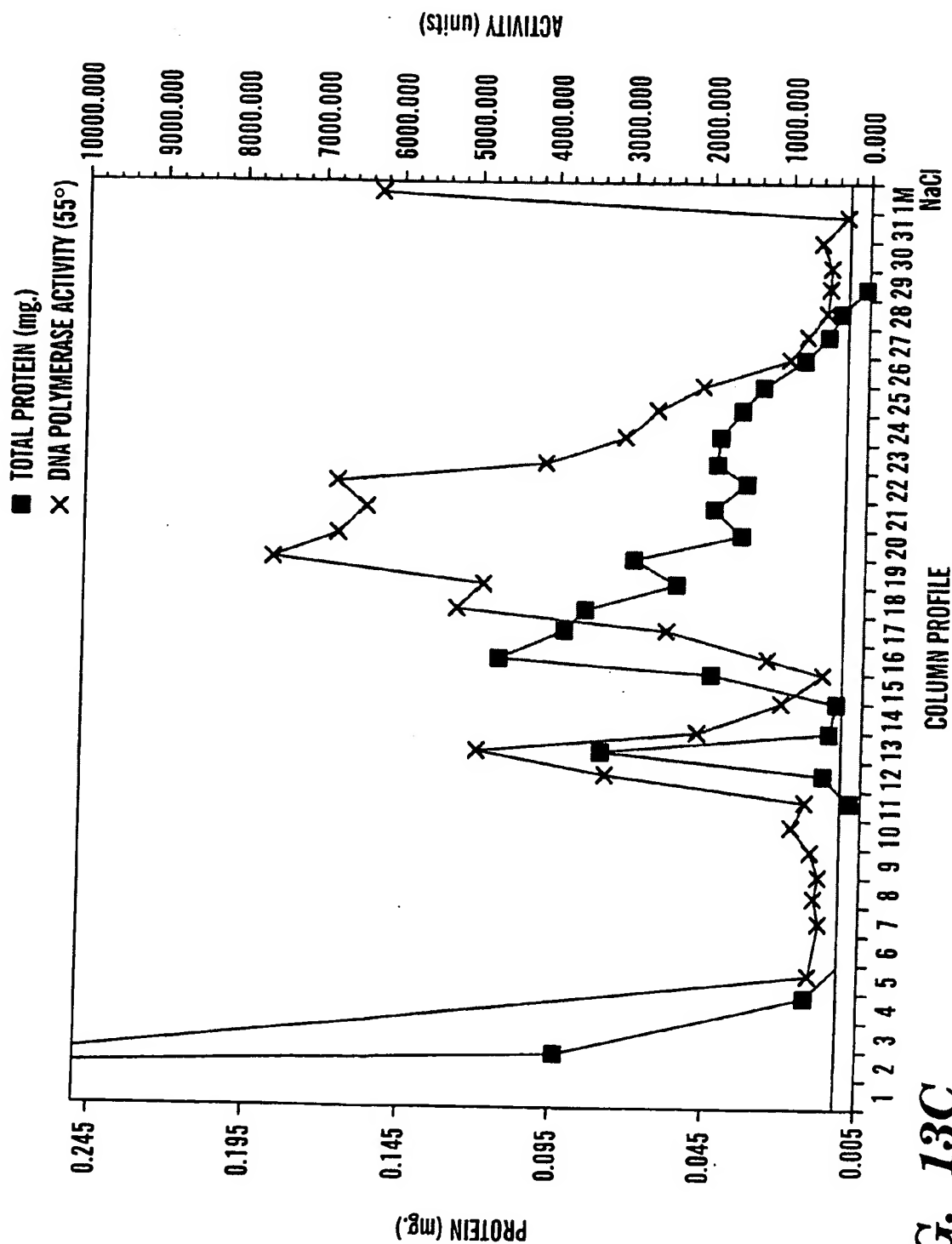
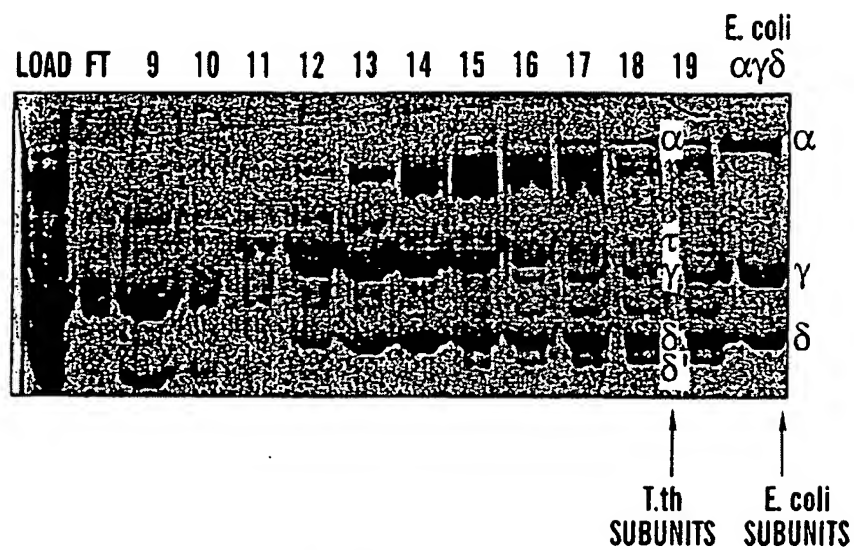


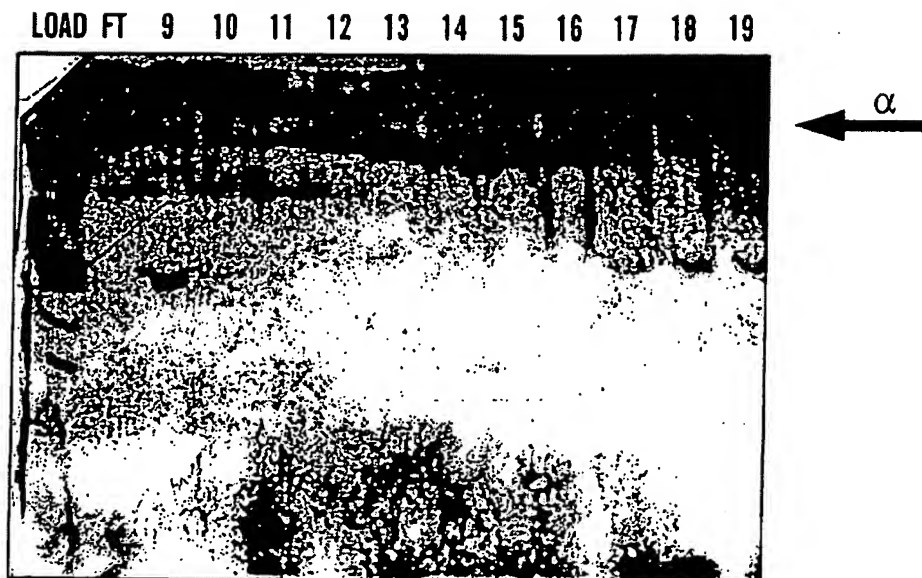
FIG. 13C

REPLACEMENT  
SHEET

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**FIG. 14A**



**FIG. 14B**

# REPLACEMENT SHEET

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Alignment of TTH1 with alphas subunits of other organisms.

E.coli	DRYFLELIRTGRPDEESYLHAAVELAEARGLPVV	197	(ID#72)
V.chol.	DH FYLELIRTGRADEESYLH FALDVAEQYDLPVV	197	(ID#73)
H.inf.	DH FYLALSRTGRPNEERYIQ AALKLAERCDLPLV	197	(ID#74)
R.prow.	DR FYFEIMRHDLP EEQFIENSYIQ IASELSIPIV	195	(ID#75)
H.pyl.	DD FYLEIMRHGIL DQRFIDEQV IKMSLETGLKII	213	(ID#76)
S.sp.	DD YYLEIQDHGSVEDRLVNINLVKIAQELDIKIV	202	(ID#77)
M.tub.	DN YFLELMDHGLT IERRVRDGLLEIGRALNIPPL	220	(ID#78)
T.th.	FFIEIQNHGLSEQK		(ID#61)

**FIG. 15A**

Alignment of TTH2 with alphas subunits of other organisms.

E.coli	NKRRAKNGEPPLDIAAIP LDDKKSFDM LQRSETTAVFQLESRGMKD	618	(ID#79)
V.chol.	NPRLKKAGKPPVRIEAI PLDDARSFRNLQDAKT TAVFQLESRGMKKE	618	(ID#80)
H.inf.	NVRMVREGKPRVDIAAIP LDDPESFELLKRSETTAVFQLESRGMKD	618	(ID#81)
R.prow.	CKLLKEQGIKIDFDDMT FDDKKTYQMLCKGKGVGVFQFESIGMKD	624	(ID#82)
H.pyl.	LKIITQHKISVDFLSLDMDDPKVYKTIQSGDTVGI FQIES -GMFQ	648	(ID#83)
S.sp.	QERKALQIRARTGSKKLPDDVKKTHKLL EAGDLEGI FQLESQGMKQ	643	(ID#84)
M.tub.	IDNVRANRGIDLDESVP LDDKATYELLGRGDTLGV FQLDGGPMRD	646	(ID#85)
T.th.	RVELDYDALTLDD		(ID#60)

**FIG. 15B**



# REPLACEMENT SHEET

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ATGGGCCGGGAGCTCCGCTTCGCCCACCTCCACCAGCACA	
CCCAGTTCTCCCTCCTGGACGGGGCGGCGAAGCTTTCCGA	
CCTCCTCAAGTGGGTCAAGGAGACGACCCCGAGGACCCC	120
GCCTTGGCCATGACCGACCACGGCAACCTCTTCGGGGCCG	
TGGAGTTCTACAAGAAGGCCACCGAAATGGGCATCAAGCC	
CATCCTGGGCTACGAGGCCTACGTGGCGGCGGAAAGCCGC	240
TTTGACCGCAAGCGGGGAAAGGGCCTAGACGGGGGCTACT	
TTACCTCACCTCCTCGCCAAGGACTTCACGGGGGTACCA	
GAACCTGGTGC GCCTGGCGAGCCGGGCTTACCTGGAGGGG	360
TTTTACGAAAAGCCCCGGATTGACCGGGAGATCCTGCGCG	
AGCACGCCGAGGGCCTCATCGCCCTCTCGGGGTGCCTCGG	
GGCGGAGATCCCCCAGTTCATCCTCCAGGACCGTCTGGAC	480
CTGGCCGAGGCCCGGCTCAACGAGTACCTCTCCATCTTCA	
AGGACCGCTTCTTCATCGAGATCCAGAACCACGGCCTCCC	
CGAGCAGAAAAAGGTCAACGAGGTCTCAAGGAGTTCGCC	600
CGAAAGTACGGCCTGGGGATGGTGGCCACCAACGACGGCC	
ATTACGTGAGGAAGGAGGACGCCCGCGCCACGAGGTCTT	
CCTCGCCATCCAGTCCAAGAGCACCTTGGACGACCCCGGG	720
CGCTGGCGCTTCCCTGCGACGAGTTCTACGTGAAGACCC	
CCGAGGAGATGCGGGCCATGTTCCCGAGGAGGAGTGGGG	
GGACGAGCCCTTTGACAACACCGTGGAGATCGCCCGCATG	840
TGCAACGTGGAGCTGCCCATCGGGGACAAGATGGTCTACC	
GAATCCCCCGCTTCCCCCTCCCCGAGGGGCGGACCGAGGC	
CCAGTACCTCATGGAGCTCACCTTCAAGGGGCTCCTCCGC	960
CGCTACCCGGACCGGATCACCGAGGGCTTCTACCGGGAGG	
TCTTCCGCCTTTTGGGGAAGCTTCCCCCCCACGGGGACGG	
GGAGGCCTTGGCCGAGGCCTTGGCCCAGGTGGAGCGGGAG	1080
GCTTGGGAGAGGCTCATGAAGAGCCTCCCCCCTTTGGCCG	
GGGTCAAGGAGTGGACGGCGGAGGCCATTTTCCACCGGGC	
CCTTTACGAGCTTTCCGTGATAGAGCGCATGGGGTTTCCC	1200
GGCTACTTCCTCATCGTCCAGGACTACATCAACTGGGCCC	
GGAGAAACGGCGTCTCCGTGGGGCCCGGCAGGGGGAGCGC	
CGCCGGGAGCCTGGTGGCCTACGCCGTGGGGATCACCAAC	1320
ATTGACCCCTCCGCTTCGGCCTCCTCTTTGAGCGCTTCC	
TGAACCCGGAGAGGGTCTCCATGCCCGACATTGACACGGA	
CTTCTCCGACCGGGAGCGGGACCGGGTGATCCAGTACGTG	1440
CGGGAGCGCTACGGCGAGGACAAGGTGGCCCAGATCGGCA	
CCCTGGGAAGCCTCGCCTCCAAGGCCGCCCTCAAGGACGT	
GGCCCGGGTCTACGGCATCCCCACAAGAAGGCGGAGGAA	1560
TTGGCCAAGCTCATCCCGGTGCAGTTCGGGAAGCCCAAGC	
CCCTGCAGGAGGCCATCCAGGTGGTGCCGGAGCTTAGGGC	
GGAGATGGAGAAGGACCCCAAGGTGCGGGAGGTCTTCGAG	1680
GTGGCCATGCGCCTGGAGGGCCTGAACCGCCACGCCTCCG	
TCCACGCCCGCGGGGTGGTGATCGCCGCCGAGCCCCTCAC	
GGACCTCGTCCCCCTCATGCGCGACCAGGAAGGGCGGCCC	1800
GTCACCCAGTACGACATGGGGGCGGTGGAGGCCTTGGGGC	
TTTTGAAGATGGACTTTTTGGGCCTCCGCACCCTCACCTT	

**FIG. 16A**

# REPLACEMENT SHEET

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CCTGGACGAGGTCAAGCGCATCGTCAAGGCGTCCCAGGGG	1920
GTGGAGCTGGACTACGATGCCCTCCCCCTGGACGACCCCA	
AGACCTTCGCCCTCCTCTCCCGGGGGGAGACCAAGGGGGT	
CTTCCAGCTGGAGTCGGGGGGGATGACCGCCACGCTCCGC	2040
GGCCTCAAGCCGCGGCGCTTTGAGGACCTGATCGCCATCC	
TCTCCCTCTACCGCCCCGGGCCCATGGAGCACATCCCCAC	
CTACATCCGCGGCCACCACGGGCTGGAGCCCGTGAGCTAC	2160
AGCGAGTTTCCCCACGCCGAGAAGTACCTAAAGCCCATCC	
TGGACGAGACCTACGGCATCCCCGTCTACCAGGAGCAGAT	
CATGCAGATCGCCTCGGCCGTGGCGGGGTACTCCCTGGGC	2280
GAGGCGGACCTCCTGCGGCGGTCCATGGGCAAGAAGAAGG	
TGGAGGAGATGAAGTCCCACCGGGAGCGCTTCGTCCAGGG	
GGCCAAGGAAAGGGGCGTGCCCGAGGAGGAGGCCAACCGC	2400
CTCTTTGACATGCTGGAGGCCTTCGCCAACTACGGCTTCA	
ACAAATCCCACGCTGCCGCCTACAGCCTCCTCTCCTACCA	
GACCGCCTACGTGAAGGCCCACTACCCCGTGGAGTTCATG	2520
GCCGCCCTCCTCTCCGTGGAGCGGCACGACTCCGACAAGG	
TGGCCGAGTACATCCGCGACGCCCGGGCCATGGGCATAGA	
GGTCCTTCCCCCGGACGTCAACCGCTCCGGGTTTGACTTC	2640
CTGGTCCAGGGCCGGCAGATCCTTTTCGGCCTCTCCGCGG	
TGAAGAACGTGGGCGAGGCGGCGGCGGAGGCCATTCTCCG	
GGAGCGGGAGCGGGGCGGCCCTACCGGAGCCTCGGCGAC	2760
TTCTCAAGCGGCTGGACGAGAAGGTGCTCAACAAGCGGA	
CCCTGGAGTCCCTCATCAAGGCGGGCGCCCTGGACGGCTT	
CGGGGAAAGGGCGCGGCTCCTCGCCTCCCTGGAAGGGCTC	2880
CTCAAGTGGGCGGCCGAGAACCAGGGAGAAGGCCCGCTCGG	
GCATGATGGGCCTCTTCAGCGAAGTGGAGGAGCCGCCTTT	
GGCCGAGGCCGCCCCCCCTGGACGAGATCACCCGGCTCCGC	3000
TACGAGAAGGAGGCCCTGGGGATCTACGTCTCCGGCCACC	
CCATCTTGCGGTACCCCGGGCTCCGGGAGACGGCCACCTG	
CACCTTGGAGGAGCTTCCCCACCTGGCCCGGGACCTGCCG	3120
CCCCGGTCTAGGGTCTCCTTGCCGGGATGGTGGAGGAGG	
TGGTGCGCAAGCCCACAAAGAGCGGCGGGATGATGGCCCCG	
CTTCGTCTCTCCGACGAGACGGGGGCGCTTGAGGCGGTG	3240
GCATTCGGCCGGGCCTACGACCAGGTCTCCCCGAGGCTCA	
AGGAGGACACCCCCGTGCTCGTCTCTCGCCGAGGTGGAGCG	
GGAGGAGGGGGGCGTGCGGGTGCTGGCCCAGGCCGTTTGG	3360
ACCTACGAGGAGCTGGAGCAGGTCCCCCGGGCCCTCGAGG	
TGGAGGTGGAGGCCTCCCTCCTGGACGACCGGGGGGTGGC	
CCACCTGAAAAGCCTCCTGGACGAGCACGCGGGGACCCTC	3480
CCCCTGTACGTCCGGGTCCAGGGCGCCTTCGGCGAGGCC	
TCCTCGCCCTGAGGGAGGTGCGGGTGCGGGGAGGAGGCTGT	
AGGCGGCCGCGTGGTTCCGGGCCTACCTCCTGCCCGACCG	3600
GGAGGTCTTTCTCCAGGGCGGCCAGGCGGGGGAGGCCAG	
GAGGCGGTGCCCTTCTAGGGGGTGCGCCGTGAGACCTAGC	
GCCATCGTTCTCGCCGGGGGCAAGGAGGCCTGGGCCCGAC	3720
CCCTTTTGG	

**FIG. 16B**

# REPLACEMENT SHEET

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MGRELRF AHLHQHTQFSLLDGAPKLSDLLKWVEETTPEDP	
ALAMTDHGNLFGAVEFYKKATEMGIKPILGYEAYVAAESR	
FDRKRGKGLDGGYFHLTLLAKDFTGYQNLVRLASRAYLEG	120
FYEKPRIDREILREHAEGLIASGCLGAEIPQFILQDRLD	
LAEARLNEYLSIFKDRFFIEIQNHGLPEQKKVNEVLKEFA	
RKYGLGMVATNDGHYVRKEDARAHEVLLAIQSKSTLDDPG	240
ALALPCEEFYVKTPEEMRAMFPEEEVGGRSPLTTPWRSPH	
VORGAAIGTRWSTRI PRFPLPEGRTEAQYLMELTFKGLLR	
RYPDRITEGFYREVFRLSGKLPPHGDGEALAEALAQVERE	360
AWERLMKSLPPLAGVKEWTAEAFHRLYELSAIERMGFP	
GLLPHRPGHLHQLGPEKGVSVGPGRGGAAGSLVAYAVGITN	
IDPLRFGLL FERFLNPERVSM PDIDTDFSDRERDRVIQYV	480
RERYGEDKVAQIGTLGSLASKAALKEVARVYGIPRKKAE	
LAKLIPVQFGKPKPLQEA IQVPELRAEMEKDPKVREVL	
VAMRLEGLNRHASVHAGRGGVFSEPLTDLVPLCATRKGGP	600
YTQYDMGAVEALGLLKMDFLGLRTLTFLEVKRIVKASQG	
VELDYDALPLDDPKTFALLSRGETKGVFQLESGGMTATLR	
GLKPRRFEDLIAILSLYRPGPMEHIPTYIRRHHGLEPVSY	720
SEFPHAKEYLKPILDETYGIPVYQEQIMQIASAVAGYSLG	
EADLLRRSMGKKKVEEMKSHRERFVQAKERGVPEEEANR	
LFDMLEAFANYGFNKSHAAAYSLLSYQTAYVKAHYPVEFM	840
AALLSVERHDSKVAEYIRDARAMGIEVLPPDVNRSGFDF	
LVQGRQILFGLSAVKNVGEAAAAEAILRERERGGPYRSLGD	
FLKRLDEKVLNKRTLES LIKAGALDGFGERARLLASLEGL	960
LKWAAENREKARSGMMGLFSEVEEPPLAEAAPLDEITRLR	
YEKEALGIYVSGHPILRYPGLRETATCTLEELPHLARDLP	
PRSRVLLAGMVEEVVRKPTKSGGMMARFVLSDETGALEAV	1080
AFGRAYDQVSPRLKEDTPVLVLAEVEREEGGVRVLAQAVW	
TYQELEQVPRALEVEVEASLPDDRGV AHLKSLLDEHAGTL	
PLYVRVQGAFG EALLALREVRVGE EALGALEAAGFPAYLL	1200
PNREVSPRLTGSGGPRGRALSTGLALKTYPIALPGGNEAL	
ARPLL	

**FIG. 16C**

# REPLACEMENT SHEET

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T. th.	Start1	Start2	3'-Exo I
D. rad.	VERVVRTLLDGRFLLEEGVGLWEWRYPPFLEGEAVVLDLETTGLAG-----LDEVIEVGLLRLEGG---RRLPF		
Bac. sub.	HGIKMIYGM EANLVDDGVPIAYNAAHRLLEEETVVFVDTTGLSAV-----YDTIIELA AVKVKGGE--IIDKF	PWPQDVVFDLETTGFSPA-----SAAIVEIGAVRIVGGQIDETLKF	
H. inf.		MINPNRQIVLDTETTGMNQLGAHYEGHCHIEIGAVELINRR-YTGNNX	
E. c.		MSTAITRQIVLDTETTGMNQIGAHSEGHKIEIGAVEVVNRR-LTGNNF	
H. pyl.	NLEYLKACGLNF IETSENLI TLKNLKTPLKDEVFSFIDLETTGSCPI-----KHEILEIGAVQVKGE--IINRF		
T. th.			3'-Exo II
D. rad.	QSLVR-PLPP---AEARSWNLT---GIPREALEEAPSLEEVLEKAYPLRGDATLVIHNAAFDLGFL-RPALEGLG		
Bac. sub.	ETLVR-PTRPDGSML SIPWQAQRVHGISDEMVRRAPAXKDVLPDFDFVDGS AVVAHNVSFDGGFM-RAGAERLG		
H. inf.	EAFAN-PHRP---LSATIIELT---GITDDMLQADPVDVIRDFREWIGDDILVAHNASFDMGFL-NVAYKKLL		
E. c.	HIYIK-PDRP---XDPDAIKVH---GITDEMLADKPEFKEVAQDFLDYINGAELLIHNAFPDVGFM-DYEFRRKLN		
H. pyl.	HVYIK-DRLV---DPEAFGVH---GIAVDFLLDKPTFAEVAVEFMDYIRGAELV IHNAAFDVGFM-DYEFSLLK		
	ETLVKVSVP-----DYIAELT---GITYEDTLNAPS AHEALQELRLFLGNSV FVAHNANFDYNFLGRYFVEKLN		
T. th.			3'-Exo III
D. rad.	-----YRLENPVVDSLRLARRGLPGLRRYGLDALSEVLELPRRT--CHRALEDVERTLAVVHEVYMLT-----SG		
Bac. sub.	-----LSWAPERELCTMQLSRRAPPRERTHNLTVLAERLGLFEFAPGGRHRSYGDVQVTAQAYLRLLLELLG-----ER		
H. inf.	E-----VEKAKNPVIDTLELGRFLYPEFKNHRLNTLCKKFDIELTQ--HHRAIYDTEATAYLLKMLKDA-----EK		
E. c.	-LNVKTDDICLVTDTLQMARQMPGKRN-NLDALCDRLGIDNSKRTLHGALLDAEILADVYLMMTGGQTNLFDEEE		
H. pyl.	RDI AKTNFTCKVTDLSLAVARKMFPGKRN-SLDALCARYEIDNSKRTLHGALLDAQILA EVYLAMTGGQTSMAFAME		
	-----CPLLNLKLC TDL SKRAILSMRY-SLSFLKELLGFGIEV--SHRAYADALASYKLF EICLLNLP--SYIKT		

FIG. 17

REPLACEMENT  
SHEET

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ATGGTGGAGCGGGTGGTGC GGACCCTTCTGGACGGGAGGT 40  
TCCTCCTGGAGGAGGGGGTGGGGCTTTGGGAGTGGCGCTA  
CCCCTTTCCCCTGGAGGGGGAGGCGGTGGTGGTCCTGGAC 120  
CTGGAGACCACGGGGCTTGCCGGCCTGGACGAGGTGATTG  
AGGTGGGCCTCCTCCGCCTGGAGGGGGGGAGGCGCCTCCC 200  
CTTCCAGAGCCTCGTCCGGCCCCCTCCCGCCCGCCGAAGCC  
CGTTCGTGGAACCTCACCGGCATCCCCCGGGAGGCCCTGG 280  
AGGAGGCCCCCTCCCTGGAGGAGGTTCTGGAGAAGGCCTA  
CCCCCTCCGCGGCGACGCCACCTTGGTGTATCCACAACGCC 360  
GCCTTTGACCTGGGCTTCCTCCGCCCCGGCCTTGGAGGGCC  
TGGGCTACCGCCTTGAAAACCCCGTGGTGGACTCCCTGCG 440  
CTTGGCCAGACGGGGCTTACCAGGCCTTAGGCGCTACGGC  
CTGGACGCCCTCTCCGAGGTCCTGGAGCTTCCCCGAAGGA 520  
CCTGCCACCGGGCCCTCGAGGACGTGGAGCGCACCCCTCGC  
CGTGGTGCACGAGGTATACTATATGCTTACGTCCGGCCGT 600  
CCCCGCACGCTTTGGGAACCTCGGGAGGTAG

**FIG. 18A**

MVERVVRTLLDGRFLLEEGVGLWEWRYPFPLEGEAVVLD 40  
LETTGLAGLDEVIEVGLLRLEGGRRLPFQSLVRPLPPAEA  
RSWNLTGIPREALEEAPSLEEVLEKAYPLRGDATALVIHNA 120  
AFDLGFLRPALEGLGYRLENPVVDSLRLARRGLPGLRRYG  
LDALSEVLELPRRTCHRALEDVERTLAVVHEVYYMLTSGR 200  
PRTLWELGRZ

**FIG. 18B**

REPLACEMENT  
SHEET

## Alignment of dnaA genes.

P. mar.	MLEASWEK	VQSSL--KQNLK--	-----PSYE	TWIRPTEFSG--FKN	GELTLIAPNSFSSAW	LKNYSQTIQETAE-	65
Syn. sp.	MVSCENLWQQ	ALAIL--ATQLTK--	-----PAFD	TWIKASVLIS--LGD	GVATIQVENGFVLNH	LQKSYGPLLMEVLT-	67
B. sut.	MENILDWNQ	ALAQI--EKKLSK--	-----PSFE	TWMKSTKAHS--LQG	DTLTITAPNEFARDW	LESRYLHLIADTIY-	67
M. tub.	MTDDPGSGFTTVWNA	VVSELNGDPKVDDGP	SSDANLSAPLTPQQR	AWNLVQPLT--IVE	GFALLSVPSFVQNE	IERHLRAPITDALS-	87
T. th.	MSHEAVWQH	VLEHI--RRSITE--	-----VEFH	TWFERIRPLG--IRD	GVLEAVPTSFALDW	IRHYAGLIQEGPR-	66
E. coli	MSLSLWQQ	CLARL--QDELPA--	-----TEFS	MWIRPLQAE--LSD	NTLALYAPNRFVLDW	VRDKYLNNINGLLT-	64
T. mar.	MKER	ILQEI--KTRVNR--	-----KSWE	LWFSDFVKS--IEG	NKVVSUGNLFIKEW	LEKKYYSVLSKAVK-	61
H. pyl.	MDTNNNIEKE	ILALVKQNPKVSL--	-----IEYE	NYFSQLKYNPNASKS	DIAPFVAPNQVLCCT	ITAKYGALLKEILSQ	72
P. mar.	EIFG---	EPVTVHVK	VKANAESSDEHYSSA	P-----	ITPPLASPGSV	DSSGSSLRLSK----	130
Syn. sp.	DLTG---	QEITVKLI	TDGLEPHS----	LIGQ	E-----	SSLPMETTP----	115
B. sut.	ELTG---	EELSIFV	IPQNDVEDFMPKPQ	VKKAVKEDTSDFPQN	-----	-----	119
M. tub.	RRLGH-QIQLGVRIA	PPATDEADDTTVPPS	ENPATTSPDTTDDND	EIDDSAAARGDNQHS	WPSYFTERPHNTDSA	TAGVTSLNRRYTFDT	176
T. th.	LLGAQ-APRFELRVV	PGVVQEDIFQPPPS	PPAQAP-----	-----	-----	-----EDTFKT	108
E. coli	SFCGADAPQLRFEVG	TKPVTQTPQAAVTSN	VAAPAQVAQTQPQRA	APSTRSGWNVVAPA	EP-----	-TYRSNVNVKHTFDN	140
T. mar.	VVLG---	NDATFEIT	YEAPEPHSSYSEPLV	KKRAVLLTP-----	-----	-----LNPDYTFEN	106
H. pyl.	NKVG-MHLAHSVDVR	IEVAPKIQINAQSN	NYKAIKTS-----	-----	-----	-----VKDSYTFEN	118
P. mar.	FVVGPNRMAHAAAM	AVAESPGREFNPLFI	CGGVGLGKTHLMQAI	GHYRLEIDPGAKVSY	VSTETFTNDLIL--A	IRQDRMQAFDRYR-	217
Syn. sp.	FVVGPTNRMAHAASL	AVAESPGREFNPLFL	CGGVGLGKTHLMQAI	AHYRLEMYPNKVVY	VSTERFTNDLIT--A	IRQDNMEDFRSYR-	202
B. sut.	FVIGSGNRFAHAASL	AVAEAPAKAYNPLFI	YGGVGLGKTHLMHAI	GHYVIDHNPSAKVVY	LSSEKFTNEFIN--S	IRDNKAVDFRNRYR-	206
M. tub.	FVIGASNRFAHAASL	AIAEAPARAYNPLFI	WGESGLGKTHLLHAA	GNVQARLFPGRVVKY	VSTEEFTNDFIN--S	LRDRKVAFKRSYR-	263
T. th.	SMWGPTTPWPHGGAV	AVAESPGRAYNPLFI	YGGRLGKTYLHMAV	GPLRAKRFPHMRLEY	VSTETFTNELINRPS	AR-DRMTEFRERYR-	196
E. coli	FVEGKSNQLARAAAR	QVADNPGGAYNPLFL	YGGTGLGKTHLLHAV	GNGITMARKPNKVVY	MHSERFVQDMVK--A	LQNNAIIEEFKRYR-	227
T. mar.	FVVGPGNSFAYHAAL	EVAKHPGR--YNPLFI	YGGVGLGKTHLLQSI	GNVVVQNEPDLRVMY	ITSEKFLNDLVD--S	MKEGKLNFEFREKYR	193
H. pyl.	FVVGSCNNTVVEIAK	KVAQSDTPPPYNPLV	YGGTGLGKTHILNAI	GNHALEK--HKKVVL	VTSEDFLTDFLK--H	LDNKTMDSFKAKYR-	203

FIG. 19A

# REPLACEMENT SHEET

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P. mar.	AADLILVDDIQFIEG	KEYTQEEFFHTFNAL	HDAGSQIVLASDRPP	SQIPRLQERLMSRFS	MGLIADVQAPDLETR	MAILQKKAHERVGL	307
Syn. sp.	SADFLILDDIQFIK	KEYTQEEFFHTFNAL	HEAGQVWVASDRAP	QRIPLQDRRLISRFS	MGLIADIQVPDLETR	MAILQKKAEDRIRL	292
B. sub.	NVDVLLIDDIQFLAG	KEQTQEEFFHTFNAL	HEESKQIVISSDRPP	KEIPTLEDRLRSRFE	WGLITDITPPDLETR	TAILRKKAKAEGLDI	296
M. tub.	DVDVLLVDDIQFIEG	KEGIQEEFFHTFNAL	HNANKQIVISSDRPP	KQATLEDRLRTRFE	WGLITDVQPPPELETR	TAILRKKAKAERLAV	353
T. th.	SVDLLLVDDVQFIAG	KERTQEEFFHTFNAL	YEAHKQIILSSDRPP	KDILTLEARLRSRFE	WGLITDNPAAPDLETR	TAILKMNAS-SCPED	285
E. coli	SVDALLIDDIQFFAN	KERSQEEFFHTFNAL	LEGNQIILTSDRYP	KEINGVEDRLKSRFG	WGLTVAIPEPPELETR	VAILMKKADENDIRL	317
T. mar.	KVDILLLIDDVQFLIG	KTGVQTELFHTFNEL	HDGKQIVICSDREP	QKLSEFQDRLVSRFQ	MGLVAKLEPPDEETR	KSIARKMLEIEHGEL	283
H. pyl.	HCDFLLDDAQFLQG	KPKLEEEFFHTFNEL	HANSKQIVLISDRSP	KNIAGLEDRLKSRFE	WGITAKVMPDLETK	LSIVKQKQCLNQITL	293
P. mar.	PRDLIQFIACRFTSN	IRELEGALTRAIAFA	SITGLPMTVDSIAPM	LD-----PNGQVEVT	PKQVLDKVAEVFKVT	PDEMRSASRRR-PVS	392
Syn. sp.	PKEVIEYIASHVTSN	IREGALIRAIAYT	SLSNVAMTVENIAPV	LN-----PPVEKVAAA	PETIITIVAQHYQLK	VEELLSNSRRR-EVS	377
B. sub.	PNEVMYIANQIDSN	IREGALIRVAYS	SLINKDINADLAAEA	LKDII-PSSKPKVIT	IKEIQRVVGQQFNK	LEDFKAKKRTK-SVA	384
M. tub.	PDDVLELIAASSIERN	IREGALIRVTAFA	SLANKTPIDKALAEIV	LRDLI-ADANTMQIS	AATIMAATAEYFDYT	VEELRGPGKTR-ALA	441
T. th.	PEDALEYIARQVTSN	IREWEGALMRASPFA	SLNGVELTRAVAACA	LRHLR-P--RELEAD	PLEIIRKKAAGPVRPE	TPGGAHGERRKKEW	372
E. coli	PGEVAFFIAKRLRSN	VRELEGALNRVIANA	NFTGRAITIDFVREA	LRDLL-A-LQEKLV	IDNIQKTVAEYKIK	VADLLSKRRSR-SVA	404
T. mar.	PEEVNLFVAENVDDN	LRRLRGAIILKLVYK	ETTGTKEVDLKEAILL	LKDFIKPNRVKAMD	IDELIEIVAKVTGVP	REEILSNSRV-KAL	372
H. pyl.	PEEVMEYIAQHISDN	IRQMEGAIKISVNA	NLMNASIDLNLAKTV	LEDL--QKDHAEAGSS	LENILLAVAQSLNLK	SSEIKVSSRQK-NVA	380
P. mar.	QARQVGMVLMRQGTN	LSLPRIGDTFGGKDH	TTVMYAIEQVEKKLS	S-----DPQIA	SQVQKIRDLLQIDSR	RKR-----	461
Syn. sp.	LARQVGMVLMRQHTD	LSLPRIGEAFGGKDH	TTVMYSCDKITQLQQ	K-----DWETS	QTLTSLSHRINIAGQ	APES-----	447
B. sub.	FPRQIAMVLSREMTD	SSLPKIGEEFGRDH	TTVHAHEKISKLLA	D-----DEQLQ	QHVKEIKEQLK----	-----	446
M. tub.	QSRQIAMVLCRELTD	LSLPKIGQAFG-RDH	TTVMYAQRKILSEMA	E-----RREVF	DHVKELTTRIRQRSK	R-----	507
T. th.	LPRQIAMVLVRELTP	ASLPEIGQLFGGRDH	TTVRYAIQKVQELAG	KP-----DREVQ	GLLRTLREACTDPVD	NLWITCG	446
E. coli	RPRQMAMALAKELTN	HSLPEIGDAFGGRDH	TTVLHACRKIEQLRE	E-----SHDIK	EDFSNLIRTLSS----	-----	467
T. mar.	TARRIGMYVAKNYLK	SSLRTIAEKFN-RSH	PVVVDSVKVKVDSLL	KG-----NKQLK	ALIDEVIGEISRRAL	SG-----	440
H. pyl.	LARKLVVYFARLYTP	NPTLSLAQFLDLKDH	SSISKMYSGVKMME	EEKSPFVLSLREEIK	NRLNELNDKKTAFNS	SE-----	457

FIG. 19B

# REPLACEMENT SHEET

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GTGTCGCACGAGGCCGTCTGGCAACACGTTCTGGAGCACA  
 TCCGCCGCAGCATCACCGAGGTGGAGTTCCACACCTGGTT  
 TGAAAGGATCCGCCCCCTTGGGGATCCGGGACGGGGTGCTG 120  
 GAGCTCGCCGTGCCACCTCCTTTGCCCTGGACTGGATCC  
 GCGGCCACTACGCCGGCCTCATCCAGGAGGGCCCTCGGCT  
 CCTCGGGGCCAGGCGCCCCGGTTTGAGCTCCGGGTGGTG 240  
 CCCGGGGTCGTAGTCCAGGAGGACATCTTCCAGCCCCCGC  
 CGAGCCCCCGGCCCAAGCTCAACCCGAAGATACCTTTAA  
 AACTTCGTGGTGGGGCCCAACAACCTCCATGGCCCCACGGC 360  
 GGCGCCGTGGCCGTGGCCGAGTCCCCCGGCCGGGCCTACA  
 ACCCCCTCTTCATCTACGGGGGCGGTGGCCTGGGAAAGAC  
 CTACCTGATGCACGCCGTGGGCCCACTCCGTGCGAAGCGC 480  
 TTCCCCCACATGAGATTAGAGTACGTTTCCACGGAAACTT  
 TCACCAACGAGCTCATCAACCGGCCATCCGCGAGGGACCG  
 GATGACGGAGTTCCGGGAGCGGTACCGCTCCGTGGACCTC 600  
 CTGCTGGTGGACGACGTCCAGTTCATCGCCGGAAAGGAGC  
 GCACCCAGGAGGAGTTTTTCCACACCTTCAACGCCCTTTA  
 CGAGGCCCAACAAGCAGATCATCCTCTCCTCCGACCGGCCG 720  
 CCCAAGGACATCCTCACCCCTGGAGGCGCGCCTGCGGAGCC  
 GCTTTGAGTGGGGCCTGATCACCGACAATCCAGCCCCCGA  
 CCTGGAACCCGGATCGCCATCCTGAAGATGAACGCCAGC 840  
 AGCGGGCCTGAGGATCCCGAGGACGCCCTGGAGTACATCG  
 CCCGGCAGGTCACCTCCAACATCCGGGAGTGGGAAGGGGC  
 CCTCATGCGGGCATCGCCTTTCGCCCTCCCTCAACGGCGTT 960  
 GAGCTGACCCGCGCCGTGGCGGCCAAGGCTCTCCGACATC  
 TTCGCCCCAGGGAGCTGGAGGCGGACCCCTTGGAGATCAT  
 CCGCAAAGCGGCGGGACCAGTTCGGCCTGAAACCCCGGGA 1080  
 GGAGCTCACGGGGAGCGCCGCAAGAAGGAGGTGGTCCTCC  
 CCGGCAGCTCGCCATGTACCTGGTGCGGGAGCTCACCCC  
 GGCTCCCTGCCCGAGATCGACCAGCTCAACGACGACCGG 1200  
 GACCACACCACGGTCCTCTACGCCATCCAGAAGGTCCAGG  
 AGCTCGCGGAAAGCGACCGGGAGGTGCAGGGCCTCCTCCG  
 CACCTCCGGGAGGCGTGCACATGA

**FIG. 20A**



REPLACEMENT  
SHEET

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VSHEAVWQHVLEHIRRSITEVEFHTWFERIRPLGIRDGVL  
ELAVPTSFALDWIRRHYAGLIQEGPRLPGAQAPRFELRVV  
PGVVVQEDIFQPPPSPPAQAQPEDTFKTSWWGPTTPWPHG 120  
GAVAVAESPGRAYNPLFIYGGRGLGKTYLMHAVGPLRAKR  
FPHMRLEYVSTETFTNELINRPSARDRMTEFRERYRSVDL  
LLVDDVQFIAGKERTQEEFFHTFNALYEAHKQIILSSDRP 240  
PKDILTLEARLRSRFEWGLITDNPAPDLETRAILKMNAS  
SGPEDPEDALEYIARQVTSNIREWEGALMRASPFASLNGV  
ELTRAVAAKALRHLRPRELEADPLEIIRKAAGPVRPETPG 360  
GAHGERRKKEVVLPRQLAMYLVLRELTPASLPEIDQLNDDR  
DHTTVLYAIOKVQELAESDREVQGLLRTLREACT

**FIG. 20B**

REPLACEMENT  
SHEET

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ATGAACATAACGGTTCCCAAAAACTCCTCTCGGACCAGC 40  
TTTCCCTCCTGGAGCGCATCGTCCCCTCTAGAAGCGCCAA  
CCCCCTCTACACCTACCTGGGGCTTTACGCCGAGGAAGGG 120  
GCCTTGATCCTCTTCGGGACCAACGGGGAGGTGGACCTCG  
AGGTCCGCCTCCCCGCCGAGGCCCAAAGCCTTCCCCGGGT 200  
GCTCGTCCCCGCCAGCCCTTCTTCCAGCTGGTGCGGAGC  
CTTCCTGGGGACCTCGTGGCCCTCGGCCTCGCCTCGGAGC 280  
CGGGCCAGGGGGGGCAGCTGGAGCTCTCCTCCGGGCGTTT  
CCGCACCCGGCTCAGCCTGGCCCCTGCCGAGGGCTACCCC 360  
GAGCTTCTGGTGCCCCGAGGGGGAGGACAAGGGGGCCTTCC  
CCCTCCGGACGCGGATGCCCTCCGGGGAGCTCGTCAAGGC 440  
CTTGACCCACGTGCGCTACGCCGCGAGCAACGAGGAGTAC  
CGGGCCATCTTCCGCGGGGTGCAGCTGGAGTTCTCCCCC 520  
AGGGCTTCCGGGCGGTGGCCTCCGACGGGTACCGCCTCGC  
CCTCTACGACCTGCCCCCTGCCCAAGGGTTCCAGGCCAAG 600  
GCCGTGGTCCCCGCCCGGAGCGTGGACGAGATGGTGCGGG  
TCCTGAAGGGGGCGGACGGGGCCGAGGCCGTCCTCGCCCT 680  
GGGCGAGGGGGTGTTGGCCCTGGCCCTCGAGGGCGGAAGC  
GGGGTCCGGATGGCCCTCCGCCTCATGGAAGGGGAGTTCC 760  
CCGACTACCAGAGGGTCATCCCCCAGGAGTTCGCCCTCAA  
GGTCCAGGTGGAGGGGGAGGCCCTCAGGGAGGCGGTGCGC 840  
CGGGTGAGCGTCCTCTCCGACCGGCAGAACCACCGGGTGG  
ACCTCCTTTTGGAGGAAGGCCGGATCCTCCTCTCCGCCGA 920  
GGGGGACTACGGCAAGGGGCAGGAGGAGGTGCCCCGCCAG  
GTGGAGGGGCGGACATGGCCGTGGCCTACAACGCCCGCT 1000  
ACCTCCTCGAGGCCCTCGCCCCCGTGGGGGACCGGGCCCA  
CCTGGGCATCTCCGGGCCCACGAGCCCGAGCCTCATCTGG 1080  
GGGGACGGGGAGGGGTACCGGGCGGTGGTGGTGCCCTCA  
GGGTCTAG 1128

**FIG. 21A**

REPLACEMENT  
SHEET

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MNITVPKKLLSDQLSLLERIVPSRSANPLYTYLGLYAEEG 40  
ALILFGTNGEVDLEVRLPAEAQSLPRVLVPAQPFFQLVRS  
LPGDLVALGLASEPGQGQLELSSGRFRTRLAPAEGLYP 120  
ELLVPEGEDKGAFPLRTRMPGELVKALTHVRYAASNEEY  
RAIFRGVQLEFSPQGFRAVASDGYRLALYDLPLPQGFQAK 200  
AVVPARSVDEMVRVLKGADGAEAVLALGEGVLALALEGGS  
GVRMALRLMEGEFPDYQRVIPQEFALKVQVEGEALREAVR 280  
RVSVLSDRQNHRVDLLLEEGRILLSAEGDYGKGQEEVPAQ  
VEGPDMAVAYNARYLLEALAPVGDRAHLGISGPTSPSLIW 360  
GDGEGYRAVVVPLRVZ

**FIG. 21B**

# REPLACEMENT SHEET

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T. th. beta	MNITVPKLLSDQLSLERIVPSRSANPLYTYLGLYAEAGALILFGTNGEVDLEVRPAE
E. coli. bet	MKFTVEREHLKPLQOVSGPLGGRPTLPILGNLLQVADGTLSTLGTDLMEMVARVALV
P. mirab. be	MKFIIEREQLKPLQOVSGPLGGRPTLPILGNLLKVTENTLSTLGTDLMEMMARVSL
H. infl. bet	MQFSISRENLLKPLQOVCGVLSNRPNIPVLNNVLLQIEDYRLTITGTDLEVELSSQTQLS
P. put. beta	MHFTIQREALKPLQLVAGVVERQTLPVLSNVLVQGGQQLSTLGTDLLEVELVGRVQLE
B. cap. beta	MKFTIQNDILTGNLKKITRVLVKNISFPILNLIQVEDGTLSTTTNLEIELISKIEII * . . . * . . . * . . . * . . . *
T. th. beta	AQSLP-RVLVPAQPPFQVRSPLPGDLVALGLASEPGQGQLELSSGRFRTRLSLAPAEY
E. coli. bet	QPHEPGATTVPARKFFFDICRGLP-EGAEIAVQLE--GERMLVRSGRSRFSLSTLPAADF
P. mirab. be	QSHEIGATTVPARKFFFDIWRGLP-EGAEISVELD--GDRLLVRSGRSRFSLSTLPASDF
H. infl. bet	SSSENGTFTIPAKKFLDICRTLS-DDSEITVTFE--QDRALVQSGRSRFTLATQPAEY
P. put. beta	EPAEPGEITVPARKLMDICKSLP-NDALIDIKVD--EQKLLVKAGRSRFTLSTLPANDF
B. cap. beta	TKYIPGKTTISGRKILNICRTLS-EKSKIKMQLK--NKKMYISSENSNYILSTLSADTF * . . . * . . . * . . . * . . . *
T. th. beta	PELLVPEGEDKGAFLPRLTRMPSGELVKALTHVRYAASNEEYRAIFRGVQLEFSPQGFRV
E. coli. bet	PNLDD--WQSEVEFTLPQAT----MKRLIEATQFSMAHQDVRYYLNGMLFETEGEELRTV
P. mirab. be	PNLDD--WQSEVEFTLPQAT----LKRLIESTQFSMAHQDVRYYLNGMLFETENTELRTV
H. infl. bet	PNLTD--WQSEVDFELPQNT----LRRLIEATQFSMANQDARYFLNGMKFETEGNLLRTV
P. put. beta	PTVEE--GPGSLTCNLEQSK----LRRLIERTSFAMAQQDVRYYLNGMLLEVSRLTLRAV
B. cap. beta	PNHQN--FDYISKFDISSNI----LKEMIEKTEFSMGKQDVRYYLNGMLLEKKDKFLRSV * . . . * . . . * . . . * . . . *
T. th. beta	ASDGYRLALYDLPLPQGFQA--KAVVPARSVDENVRLKGADGAEAVLALGEGVLALALE
E. coli. bet	ATDGHRLAVCSMPIGQSLPS-HSVIVPRKGVIELMRMLDG-GDNPLRVQIGSNNIRAHVG
P. mirab. be	ATDGHRLAVCAMDIGQSLPG-HSVIVPRKGVIELMRLLDGSGESLLQLQIGSNNLRAHVG
H. infl. bet	ATDGHRLAVCTISLEQELQN-HSVILPRKGVLELVRLLLET-NDEPARLQIGTNNLRVHLK
P. put. beta	STDGHRLALCMSAPIEQEDRHQVIVPRKGILELARLLTD-PEGMVSIVLGQHHIRATG
B. cap. beta	ATDGYRLAISYTQLKKDINF-FSIIIPNKAVMELLKLLNT-QPQLLNILIGSNSIRIYTK * . . . * . . . * . . . * . . . *

FIG. 22A

# REPLACEMENT SHEET

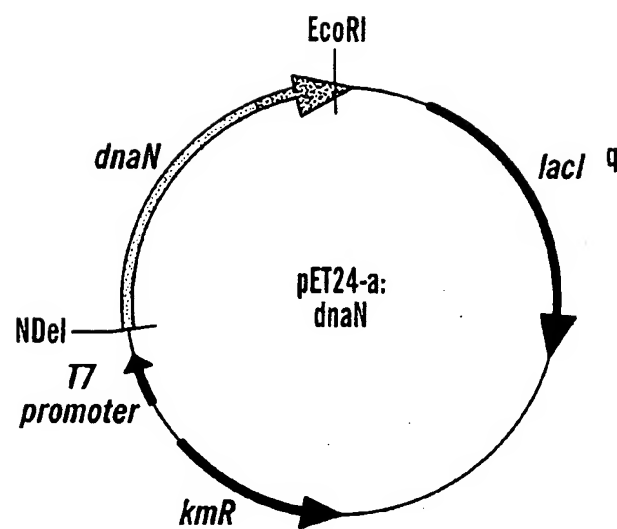
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T. th. beta	GGSGVRMALRMEGEFPDYQVRVPIQEFALKVQVEGEALREAVRRVSVLSDRQHRVDLLL	
E. coli. bet	---DFIFTSKLVDRFPDYRRVLPKNPDKHLEAGCDLLKQAFARAAILSNEKFRGVRLVY	
P. mirab. be	---DFIFTSKLVDRFPDYRRVLPKNPTKTVIAGCDILKQAFSRAAAILSNEKFRGVRLINL	
H. infl. bet	---NTVFTSKLIDGRFPDYRRVLPKNATKIVEGNWEMLKQAFARASILSNERARSVRLSL	
P. put. beta	---EFTFTSKLVDRFPDYRRVLPKNATKIVEGNWEMLKQAFARASILSNERARSVRLSL	
B. cap. beta	---NLIFTTQLIEGEYPDYKSVLFKEKNPIITNSILLKKSLLRVAILAHEKFCGIEIKI	
	* . . . * . . . * . . . * . . . *	
T. th. beta	EEGRILLSAEGDYCK - GQEEVPAQVEGPDMAVAYNARYLLEALAPVG - DRAHLGISGPTS	
E. coli. bet	SENQLKITANNPEQEEAEIILDVTSYSGAEMEIGFNVSYYLDVNLKALCENVRMMLTDSVS	
P. mirab. be	TNGQLKITANNPEQEEAEIIVDVQYQGEEMEIGFNVSYYLDVNLKALCENVRMMLTDSVS	
H. infl. bet	KENQLKITASNTHEHEEAEIIVDVNNGEELVGVFNVTYILDLNALKCNQVRMCLTDVAFS	
P. put. beta	AAGQLKIQANNPEQEEAEIISVDYEGSSLEIGFNVSYYLDVNLKALCENVRMCLTDVAFS	
B. cap. beta	ENGKFKVLSDNQEEETAEDLFEIDYFGEKIEISINVVYLLDVINNICKSENIALFLNKS	
	* . . . * . . . * . . . * . . . *	
T. th. beta	PSLIWGDG - EGYRAVVVPLRVZ	(ID#108)
E. coli. bet	SVQIEDAASQSAAYVVMMPMRLZ	(ID#109)
P. mirab. be	SVQVENVASAAAAAYVVMMPMRL -	(ID#110)
H. infl. bet	SCLIENCEDSSCEYVIMPMRL -	(ID#111)
P. put. beta	SALLQEAAGNDSSSYVVMMPMRL -	(ID#112)
B. cap. beta	SIQIEAENSSNAYVVMMLLKR -	(ID#113)
	* . . . *	

FIG. 22B

REPLACEMENT  
SHEET

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**FIG. 23**

REPLACEMENT  
SHEET

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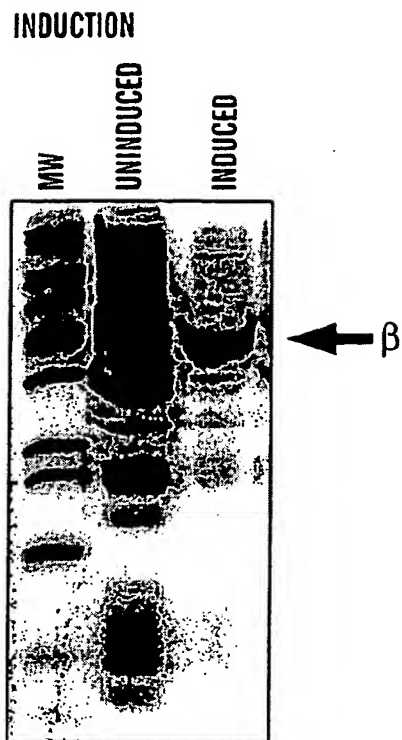


FIG. 24A

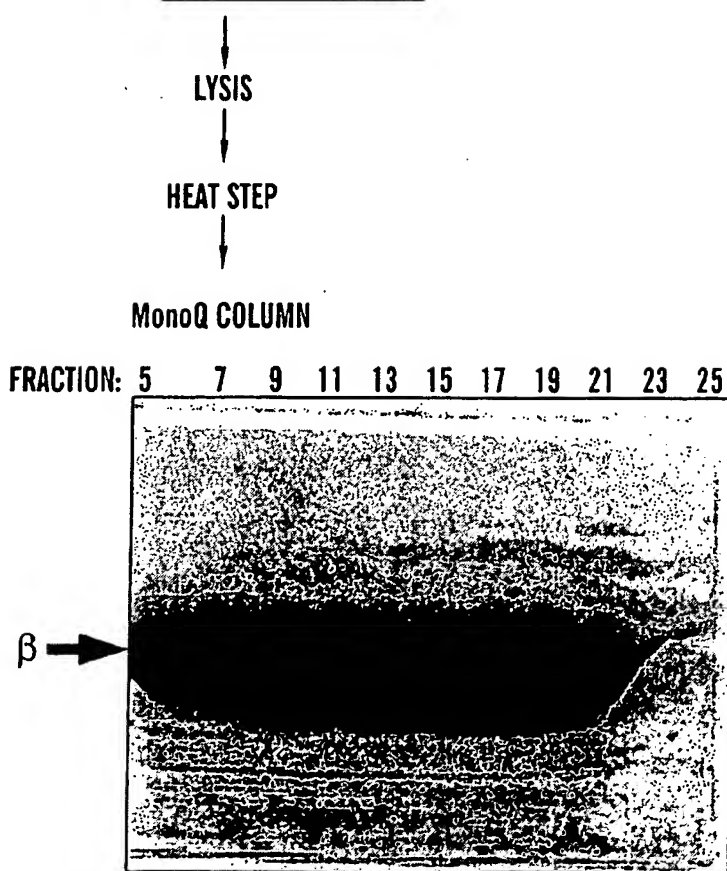
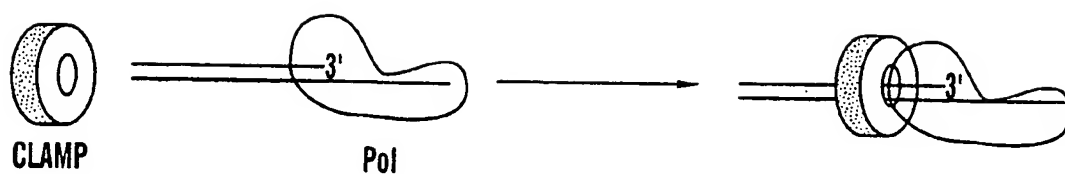


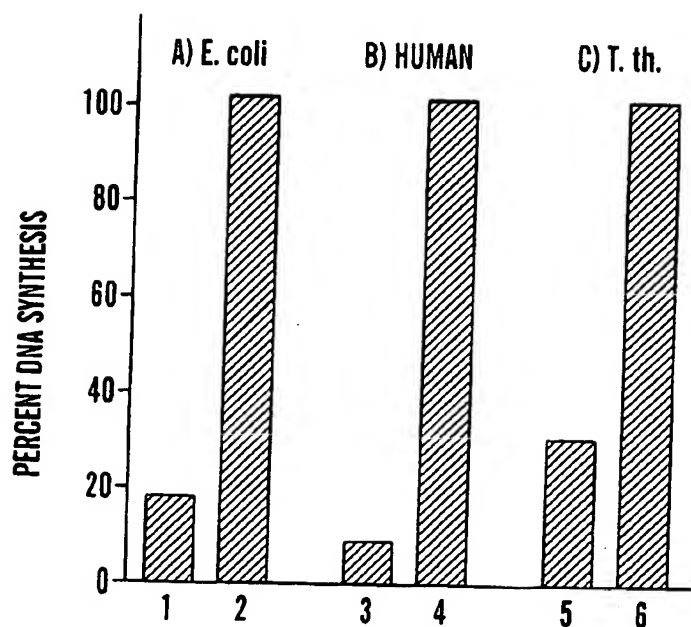
FIG. 24B

REPLACEMENT  
SHEET

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**FIG. 25A**

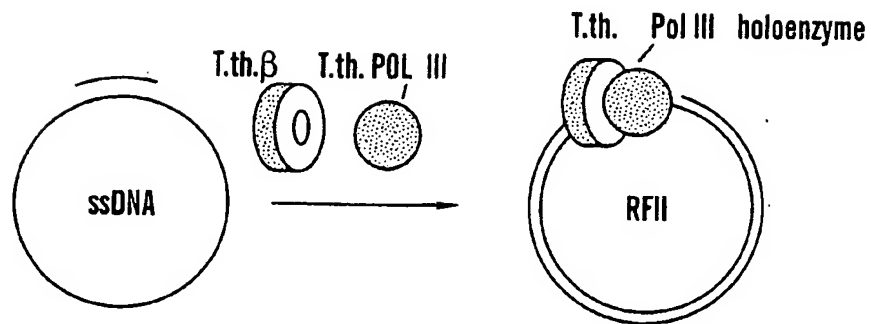


**FIG. 25B**

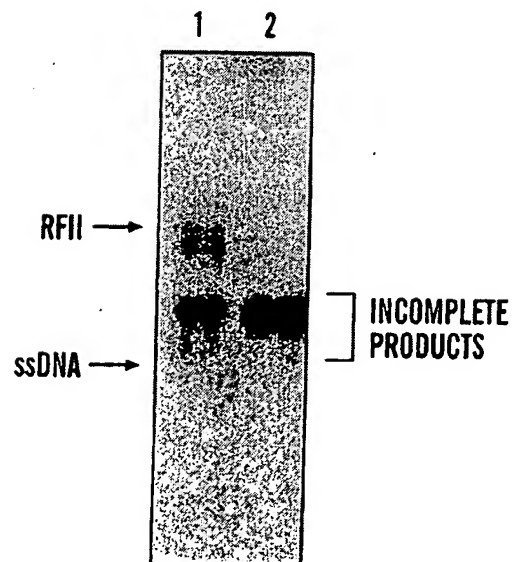


REPLACEMENT  
SHEET

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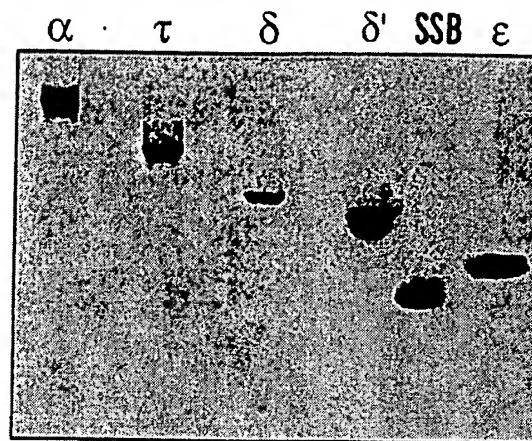
**FIG. 26A**



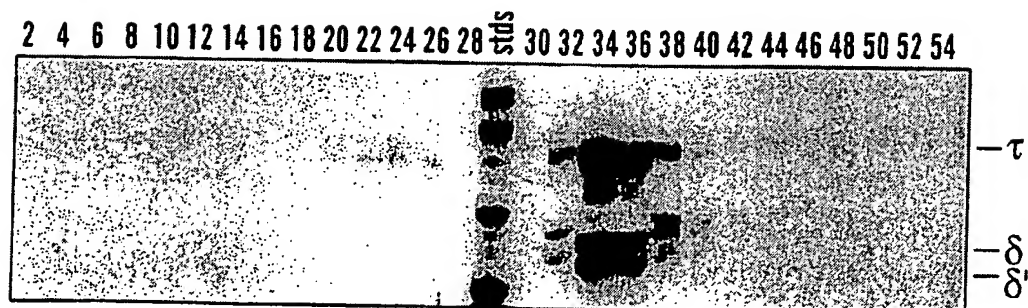
**FIG. 26B**

# REPLACEMENT SHEET

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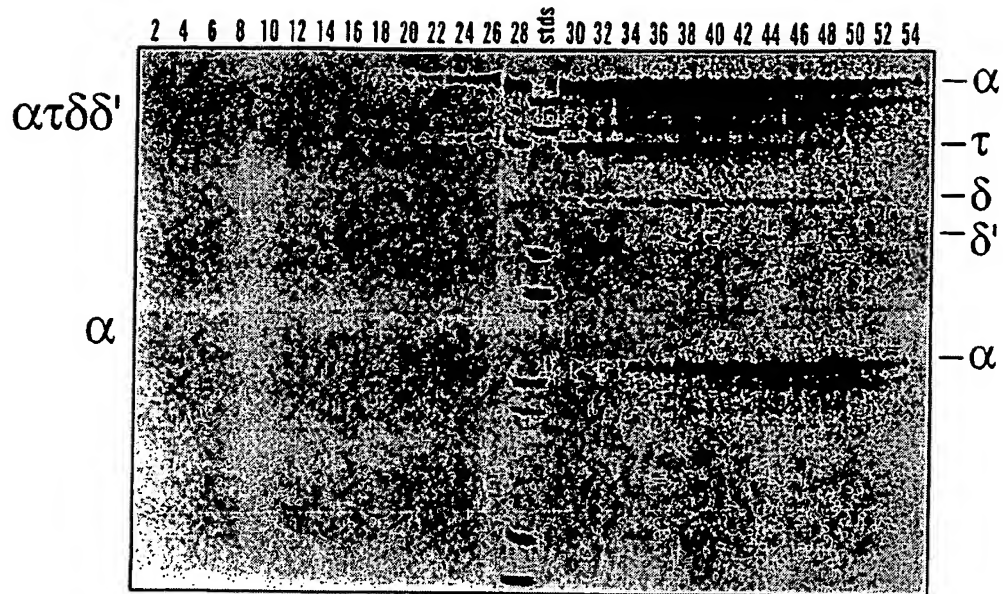
**FIG. 27**



**FIG. 28**

REPLACEMENT  
SHEET

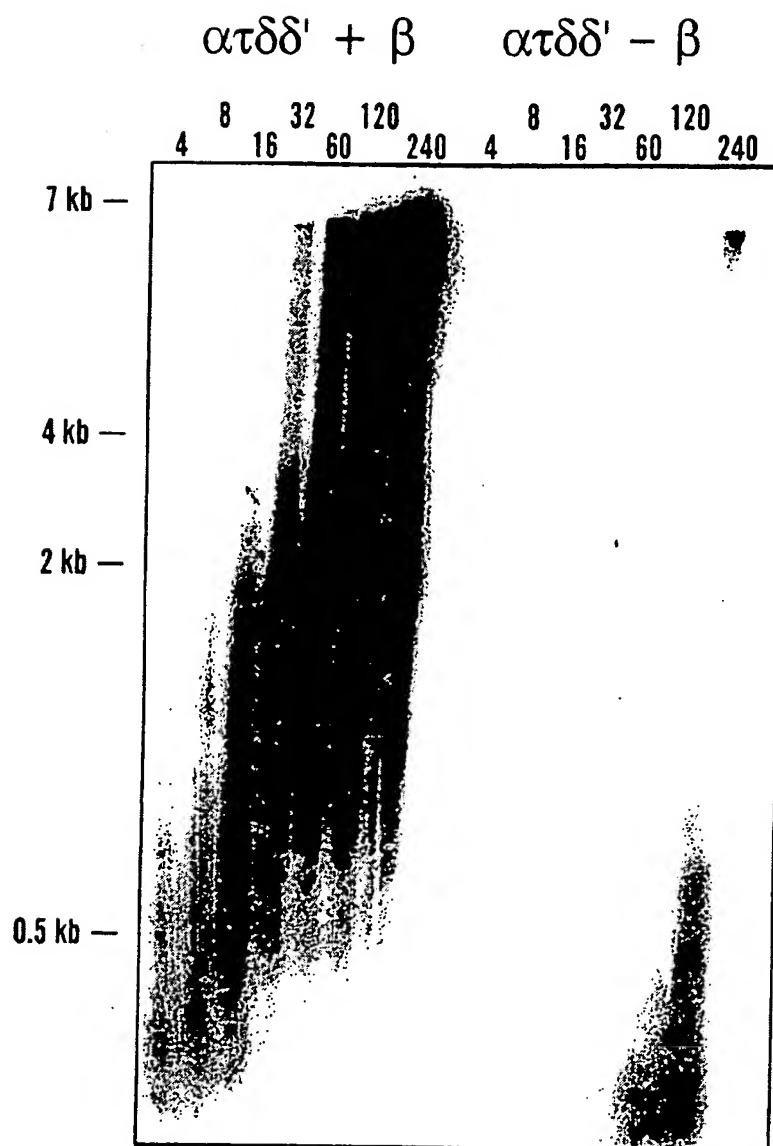
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**FIG. 29**

REPLACEMENT  
SHEET

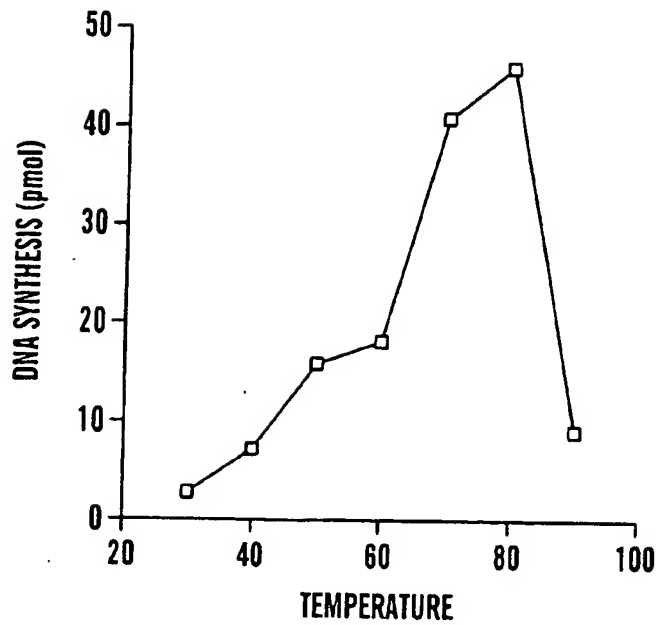
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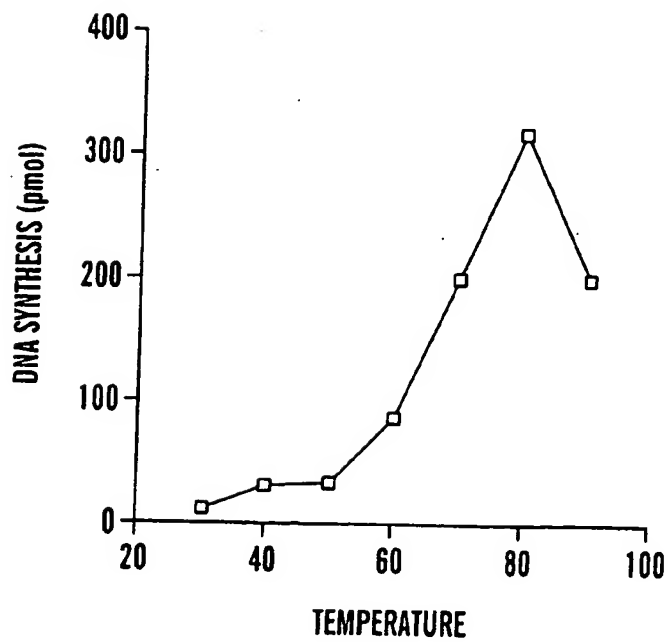
**FIG. 30**

REPLACEMENT  
SHEET

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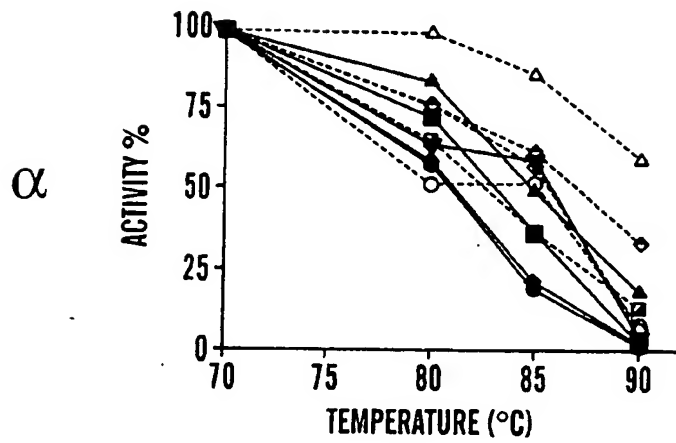
**FIG. 31**



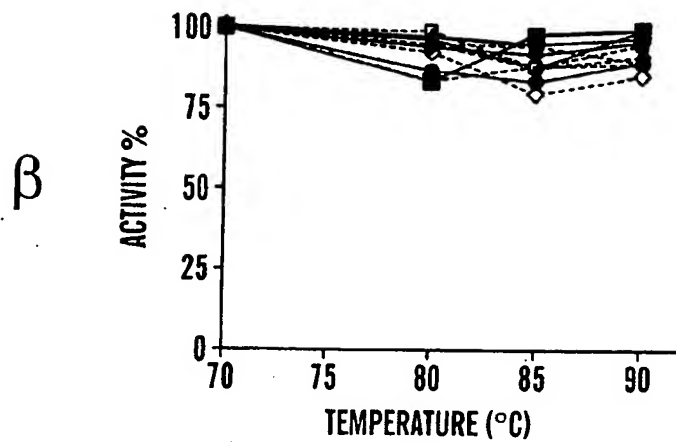
**FIG. 32**

# REPLACEMENT SHEET

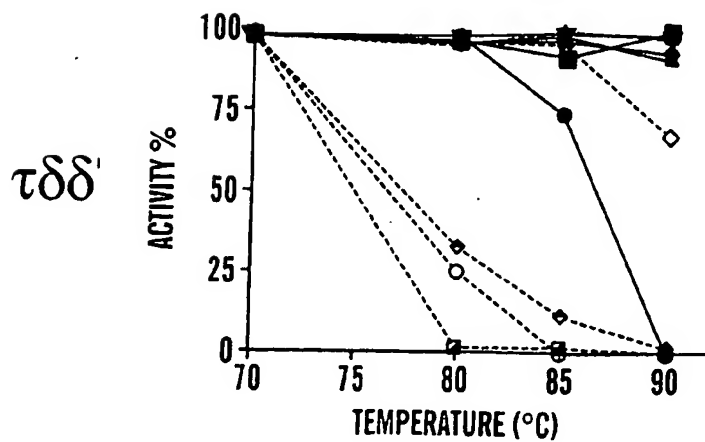
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**FIG. 33A**



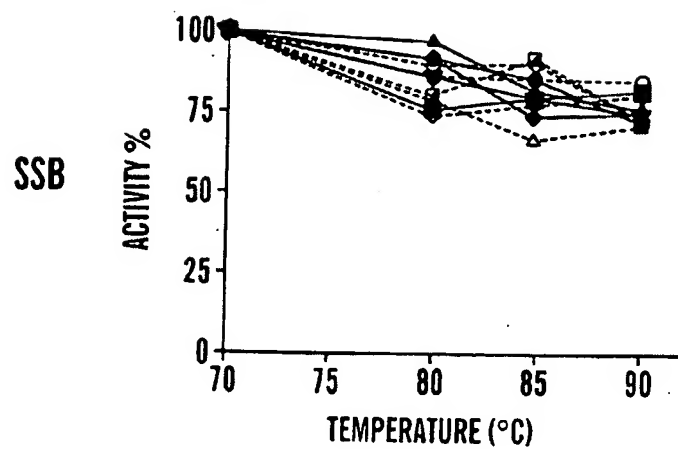
**FIG. 33B**



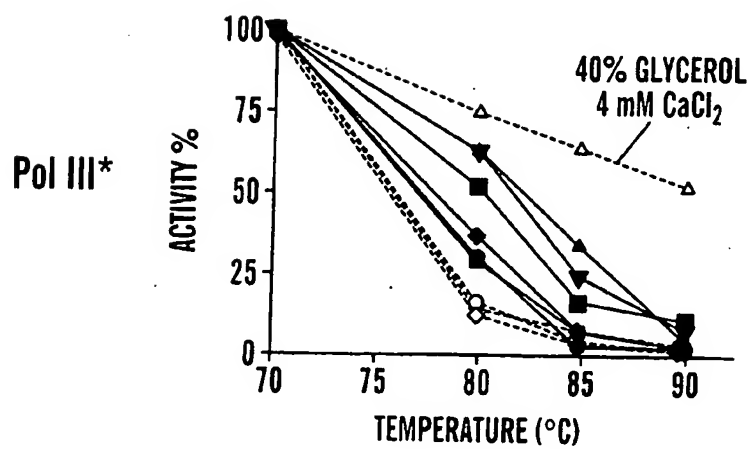
**FIG. 33C**

REPLACEMENT  
SHEET

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**FIG. 33D**



**FIG. 33E**

# REPLACEMENT SHEET

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ATGAGTAAGGATTTTCGTCCACCTTCACCTGCACACCCAGTTCTCACTCCT	
GGACGGGGCTATAAAGATAGACGAGCTCGTGAAAAAGGCAAAGGAGTATG	100
GATACAAAGCTGTCGGAATGTCAGACCACGGAAACCTCTTCGGTTCGTAT	
AAATTCTACAAAGCCCTGAAGGCGGAAGGAATTAAGCCCATAATCGGCAT	200
GGAAGCCTACTTTACCACGGGTTTCGAGGTTTGACAGAAAGACTAAAACGA	
GCGAGGACAACATAACCGACAAGTACAACCACCACCTCATACTTATAGCA	300
AAGGACGAAAAGGTCTAAAGAACTTAATGAAGCTCTCAACCCTCGCCTAC	
AAAGAAGGTTTTTACTACAAACCCAGAATTGATTACGAACTCCTTGAAAA	400
GTACGGGGAGGGCCTAATAGCCCTTACCGCATGCCTGAAAGGTGTTCCCA	
CCTACTACGCTTCTATAAACGAAGTGAAAAAGGCGGAGGAATGGGTAAAG	500
AAGTTCAAGGATATATTCGGAGATGACCTTTATTTAGAACTTCAAGCGAA	
CAACATTCCAGAACAGGAAGTGGCAAACAGGAACTTAATAGAGATAGCCA	600
AAAAGTACGATGTGAAACTCATAGCGACGCAGGACGCCCCTACCTCAAT	
CCCGAAGACAGGTACGCCCACACGGTTCTTATGGCACTTCAAATGAAAAA	700
GACCATTTCAGAACTGAGTTCGGGAAACTTCAAGTGTTCAAACGAAGACC	
TTCACTTTGCTCCACCCGAGTACATGTGGAAAAAGTTTGAAGGTAAGTTC	800
GAAGGCTGGGAAAAGGCACTCCTGAACACTCTCGAGGTAATGGAAAAGAC	
AGCGGACAGCTTTGAGATATTTGAAAACCTCCACCTACCTCCTTCCCAAGT	900
ACGACGTTCCGCCCCGACAAAACCTTGAGGAATACCTCAGAGAACTCGCG	
TACAAAGGTTTAAGACAGAGGATAGAAAGGGGACAAGCTAAGGATACTAA	1000
AGAGTACTGGGAGAGGCTCGAGTACGAACTGGAAGTTATAAACAAAATGG	
GCTTTGCGGGATACTTCTTGATAGTTCAGGACTTCATAAACTGGGCTAAG	1100
AAAAACGACATACCTGTTGGACCCCGAAGGGGAAGTGCTGGAGGTTCCCT	
CGTCGCATACGCCATCGGAATAACGGACGTTGACCTTATAAAGCACGGAT	1200
TCCTTTTTTGAGAGGTTCTTAAACCCCGAAAGGGTTTCCATGCCGGATATA	
GACGTGGATTTCTGTCTAGGACAACAGGGAAAAGGTCATAGAGTACGTAAG	1300
GAACAAGTACGGACACGACAACGTAGCTCAGATAATCACCTACAACGTAA	
TGAAGGCGAAGCAAACACTGAGAGACGTCGCAAGGGCCATGGGACTCCCC	1400
TACTCCACCGCGGACAAACTCGCAAACTCATTCCTCAGGGGGACGTTCA	
GGGAACGTGGCTCAGTCTGGAAGAGATGTACAAAACGCCTGTGGAGGAAC	1500
TCCTTCAGAAGTACGGAGAACACAGAACGGACATAGAGGACAACGTAAAG	
AAGTTCAGACAGATATGCGAAGAAAGTCCGGAGATAAAACAGCTCGTTGA	1600
GACGGCCCTGAAGCTTGAAGGTCTCACGAGACACACCTCCCTCCACGCCG	
CGGGAGTGGTTATAGCACCAAAGCCCTTGAGCGAGCTCGTTCCCTCTAC	1700
TACGATAAAGAGGGCGAAGTCGCAACCCAGTACGACATGGTTCAGCTCGA	
AGAACTCGGTCTCCTGAAGATGGACTTCCTCGGACTCAAACCCCTCACAG	1800
AACTGAAACTCATGAAAGAACTCATAAAGGAAAGACACGGAGTGGATATA	
AACTTCCTTGAACCTTCCCCTTGACGACCCGAAAGTTTACAACTCCTTCA	1900
GGAAGGAAAAACCACGGGAGTGTTCCAGCTCGAAAGCAGGGGAATGAAAG	
AACTCCTGAAGAACTAAAGCCCGACAGCTTTGACGACATCGTTGCGGTC	2000
CTCGCACTCTACAGACCCGGACCTCTAAAGAGCGGACTCGTTGACACATA	
CATTAAGAGAAAGCACGGAAAAGAACCCTTGAGTACCCCTTCCCGGAGC	2100
TTGAACCCGTCCTTAAGGAAACCTACGGAGTAATCGTTTATCAGGAACAG	
GTGATGAAGATGTCTCAGATACTTTCCGGCTTTACTCCCGGAGAGGCGGA	2200
TACCCTCAGAAAGGCGATAGGTAAGAAGAAAGCGGATTTAATGGCTCAGA	
TGAAAGACAAGTTCATACAGGGAGCGGTGGAAAGGGGATACCCTGAAGAA	2300
AAGATAAGGAAGCTCTGGGAAGACATAGAGAAGTTCGCTTCCTACTCCTT	
CAACAAGTCTCACTCGGTAGCTTACGGGTACATCTCCTACTGGACCGCCT	2400

**FIG. 34A**



REPLACEMENT  
SHEET

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ACGTTAAAGCCCCTATCCCGCGGAGTTCTTCGCGGTAAAACTCACAAC	
GAAAAGAACGACAACAAGTTCCTCAACCTCATAAAAGACGCTAAACTCTT	2500
CGGATTTGAGATACTTCCCCCGACATAAACAAGAGTGATGTAGGATTTA	
CGATAGAAGGTGAAAACAGGATAAGGTTCTGGGCTTGCGAGGATAAAGGGA	2600
GTGGGAGAGGAACTGCTAAGATAATCGTTGAAGCTAGAAAGAAGTATAA	
GCAGTTCAAAGGGCTTGCGGACTTCATAAACAAAACCAAGAACAGGAAGA	2700
TAAACAAGAAAGTCGTGGAAGCACTCGTAAAGGCAGGGGCTTTTGACTTT	
ACTAAGAAAAAGAGGAAAGAACTACTCGCTAAAGTGGCAAACCTCTGAAAA	2800
AGCATTAATGGCTACACAAAACCTCCCTTTTCGGTGCACCGAAAGAAGAAG	
TGGAAGAACTCGACCCCTTAAAGCTTGAAAAGGAAGTTCTCGGTTTTTAC	2900
ATTTACAGGGCACCCCTTGACAACCTACGAAAAGCTCCTCAAGAACCGCTA	
CACACCCATTGAAGATTTAGAAGAGTGGGACAAGGAAAGCGAAGCGGTGC	3000
TTACAGGAGTTATCACGGAACCTCAAAGTAAAAAAGACGAAAAACGGAGAT	
TACATGGCGGTCTTCAACCTCGTTGACAAGACGGGACTAATAGAGTGTGT	3100
CGTCTTCCCGGGAGTTTACGAAGAGGCAAAGGAACTGATAGAAGAGGACA	
GAGTAGTGGTAGTCAAAGGTTTTCTGGACGAGGACCTTGAAACGGAAAAT	3200
GTCAAGTTCGTGGTGAAAGAGGTTTTCTCCCTGAGGAGTTCGCAAAGGA	
GATGAGGAATACCCTTTATATATTCTTAAAAAGAGAGCAAGCCCTAAACG	3300
GCGTTGCCGAAAACTAAAGGGAATTATTGAAAACAACAGGACGGAGGAC	
GGATACAACTTGTTCTCACGGTTGATCTGGGAGACTACTTCGTTGATTT	3400
AGCACTCCCACAAGATATGAACTAAAGGCTGACAGAAAGGTTGTAGAGG	
AGATAGAAAACTGGGAGTGAAGGTCATAATTTAGTAAATAACCCTTACT	3500
TCCGAGTAGTCCCC	

**FIG. 34B**

# REPLACEMENT SHEET

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MSKDFVHLHLHTQFSLLDGAIKIDELVKKAKEYGYKAVGMSDHGNLFGSY	
KFYKALKAEIGIKPIIGMEAYFTTGSRFDRKTKTSEDNITDKYNHHLILIA	100
KDDKGLKNLMKLSTLAYKEGFYKPRIDYELLEKYGEGLIALTACLKGVP	
TYYASINEVKKAEWVKKFKDIFGDDLYLELQANNIPEQEVANRNLIIEIA	200
KKYDVKLIATQDAHYLNPEDRYAHTVLMALQMKKTIHELSSGNFKCSNED	
LHFAPPEYMWKKFEGKFEGWEKALLNTLEVMEKTADSFEIFENSTYLLPK	300
YDVPPDKTLEEYLRELAYKGLRQRIERGQAKDTKEYWERLEYELEVINKM	
GFAGYFLIVQDFINWAKKNDIPVGPGRGSAGGSLVAYAIGITDVDPIKHG	400
FLFERFLNPERVSMPDIDVDFCQDNREKVIEWVRNKYGHDNVAQIITYNV	
MKAKQTLRDVARAMGLPYSTADKLAKLIPQGDVQGTWLSLEEMYKTPVEE	500
LLQKYGEHRDIEDNVKKFRQICEESPEIKQLVETALKLEGLTRHTSLHA	
AGVVIAPKPLSELVPLYDYDKEGEVATQYDMVQLEELGLLKMDFLGLKTLT	600
ELKLMKELIKERHGVDFINFLELPLDDPKVYKLLQEGKTTGVFQLESRGMK	
ELLKKLKPDSFDDIVAVLALYRPGPLKSGLVDTYIKRKHGKEPVEYPFPE	700
LEPVLKETYGIVIVYQEQVMKMSQILSGFTPGEADTLRKAIGKKKADLMAQ	
MKDKFIQGAVERGYPEEKIRKLWEDIEKFASYSFNKSHSVAYGYISYWTA	800
YVKAHYPAEFFAVKLTTEKNDNKFLNLIKDAKLFGFEILPPDINKSDVGF	
TIEGENRIRFGLARIKGVGEETAKIIVEARKKYKQFKGLADFINKTKNRK	900
INKKVVEALVKAGAFDFTKKKRKELLAKVANSEKALMATQNSLFGAPKEE	
VEELDPLKLEKEVLGFYISGHPLDNYEKLKKNRYTPIEDLEEWDKESEAV	1000
LTGVITELKVKKTKNGDYMAVFNLVDKTGLIECVVFPGVYEEAKELIEED	
RVVVVKGFLDEDLETENVKFVVKEVFSPEEFAKEMRNTLYIFLKREQALN	1100
GVAEKLKGI IENNRTEDEGYNLVLTVDLGDYFVDLALPQDMKLKADRKVVE	
EIEKLGVKVII	1161

**FIG. 35**

# REPLACEMENT SHEET

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ATGAACTACGTTCCCTTCGCGAGAAAGTACAGACCGAAATTCTTCAGGGA	
AGTAATAGGACAGGAAGCTCCCGTAAGGATACTCAAAAACGCTATAAAAA	100
ACGACAGAGTGGCTCACGCCTACCTCTTTGCCGGACCGAGGGGGGTTGGG	
AAGACGACTATTGCAAGAATTCTCGCAAAAGCTTTGAACTGTAAAAATCC	200
CTCCAAAGGTGAGCCCTGCGGTGAGTGCGAAAACTGCAGGGAGATAGACA	
GGGGTGTGTTCCCTGACTTAATTGAAATGGATGCCGCCTCAAACAGGGGT	300
ATAGACGACGTAAGGGCATTAAAAGAAGCGGTCAATTACAAACCTATAAA	
AGGAAAGTACAAGGTTTACATAATAGACGAAGCTCACATGCTCACGAAAG	400
AAGCTTTCAACGCTCTCTTAAAAACCCTCGAAGAGCCCCCTCCCAGAACT	
GTTTTCGTCCCTTGTACCACGGAGTACGACAAAAATTCTTCCCACGATACT	500
CTCAAGGTGTCAGAGGATAATCTTCTCAAAGGTAAAGAAAGGAAAAAGTAA	
TAGAGTATCTAAAAAGATATGTGAAAAGGAAGGGATTGAGTGCGAAGAG	600
GGAGCCCTTGAGGTTCTGGCTCATGCCTCTGAAGGGTGATGAGGGATGC	
AGCCTCTCTCCTGGACCAGGCGAGCGTTTACGGGGAAGGCAGGGTAACAA	700
AAGAAGTAGTGGAGAACTTCCTCGGAATTCTCAGTCAGGAAAGCGTTAGG	
AGTTTTCTGAAATTGCTTCTGAACTCAGAAGTGGACGAAGCTATAAAGTT	800
CCTCAGAGAACTCTCAGAAAAGGGCTACAACCTGACCAAGTTTTGGGAGA	
TGTTAGAAGAGGAAGTGAGAAACGCAATTTTAGTAAAGAGCCTGAAAAAT	900
CCCGAAAGCGTGGTTCAGAACTGGCAGGATTACGAAGACTTCAAAGACTA	
CCCTCTGGAAGCCCTCCTCTACGTTGAGAACCTGATAAACAGGGGTAAAG	1000
TTGAAGCGAGAACGAGAGAACCCCTTAAGAGCCTTTGAACTCGCGGTAAATA	
AAGAGCCTTATAGTCAAAGACATAATTCCCGTATCCCAGCTCGGAAGTGT	1100
GGTAAAGGAAACCAAAAAGGAAGAAAAGAAAGTTGAAGTAAAAGAAGAGC	
CAAAAGTAAAAGAAGAAAAACCAAGGAGCAGGAAGAGGACAGGTTCCAG	1200
AAAGTTTTTAAACGCTGTGGACGGCAAAATCCTTAAAAGAATACTTGAAGG	
GGCAAAAAGGGAAGAAAGAGACGGAAAAATCGTCCTAAAGATAGAAGCCT	1300
CTTATCTGAGAACCATGAAAAAGGAATTTGACTCACTAAAGGAGACTTTT	
CCTTTTTTTAGAGTTTGAACCCGTGGAGGATAAAAAAACCTCAGAAGTC	1400
CAGCGGGACGAGGCTGTTTTAAAGGTAAAGGAGCTCTTCAATGCAAAAAT	
ACTCAAAGTACGAAGTAAAAGCTAAGGTCATAAAGGTGAGAATGCCCGTG	1500
GAAGAGATAGGGCTGTTTAACGCACTAATAGACGGCTTGCCCAGGTACGC	
ACTCACGAGGACGAAGGAAAAGGGAAAGGGAGAAGTTTTCGTTTTAGCGA	1600
CTCCTTATAAAGTCAAGGAATTGATGGAAGCTATGGAGGGTATGAAAAAA	
CACATAAAGGATTTAGAAATCCTCGGAGAGACGGATGAGGATTTAACTTT	1700
TTAAAGTATGGGTGTATCTGAGCAAAGGTTTAAAGCTAAAAACAAACCTGA	
AACCCGCAGGGGACCAGCCGAAAGCCATAAAAAAACTCCTTGAAAACCTA	1800
AGGAAAGGCGTAAAAGAACAACACTTCTCGGAGTCACGGGAAGCGGAAA	
GACTTTTACTCTAGCAAACGTAATAGCGAAGTACAACAAACCAACTCTTG	1900
TGGTAGTTCACAACAAAATTCTCGCGGCACAGCTATACAGGGAGTTTAAA	
GAACTATTCCCTGAAAACGCTGTAGAGTACTTTGTCTCTTACTACGACTA	2000
TTACCAACCTGAAGCCTACATTCCCGAAAAAGATTTATACATAGAAAAGG	
ACGCGAGTATAAACGAAAGCTGGAACGTTTCAGACACTCCGCCACGATAT	2100
CCGTTCTAGAAAGGAGGGACGTTATAGTAGTTGCTTCAGTTTCTTGCCATA	
TACGGACTCGGGAAACCTGAGCACTACGAAAACCTGAGGATAAAACTCCA	2200
AAGGGGAATAAGACTGAACTTGAGTAAGCTCCTGAGGAACTCGTTGAGC	
TAGGATATCAGAGAAATGACTTTGCCATAAAGAGGGCTACCTTCTCGGTT	2300
AGGGGAGACGTGGTTGAGATAGTCCCTTCTCACACGGAAGATTACCTCGT	
GAGGGTAGAGTTCTGGGACGACGAAGTTGAAAGAATAGTCCTCATGGACG	2400
CTCTGAAC	

**FIG. 36**

REPLACEMENT  
SHEET

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MNYVPFARKYRPKFFREVIGQEAPVRILKNAIKNDRVAHAYLFAGPRGVG	
KT TIARILAKALNCKNPSKGEPCECENC REIDRGVFPDLIEMDAASNRG	100
IDDVRLKEAVNYKPIKGKYKVYIIDEAHMLTKEAFNALLKTL EEP PPRT	
VFVLC TTEYDKILPTILSRCQRIIFSKVRKEKVIEYLKKICEKEGIECEE	200
GALEVLAHASEGCMRDAASLLDQASVYGEGRVTKEVVENFLGILSQESVR	
SFLKLLLNSEVDEAIKFLRELSEKGYNLTKFWEMLEEEVRNAILVKSLKN	300
PESVVQNWQDYEDFKDYPLEALLYVENLINRGKVEARTREPLRAFELAVI	
KSLIVKDIIPVSQLGSSVKETKKEEKKVEVKEEPKVKEEKPKEQEEDRFQ	400
KVLNAVDGKILKRILEGAKREERDGKIVLKIEASYLRMTMKKEFDSLKETF	
PFLEFEPVEDKKKPQKSSGTRLF	473

**FIG. 37**

# REPLACEMENT SHEET

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ATGCGCGTTAAGGTGGACAGGGAGGAGCTTGAAGAGGTTCTTAAAAAAGC	
AAGAGAAAGCACGGAAAAAAGCCGCACTCCCGATACTCGCGAACTTCT	100
TACTCTCCGCAAAAGAGGAAAACTTAATCGTAAGGGCAACGGACTTGGA	
AACTACCTTGTAAGTCTCCGTAAAGGGGGAGGTTGAAGAGGAAGGAGAGGT	200
TTGCGTCCACTCTCAAAAACTCTACGATATAGTCAAGAACTTAAATCCG	
CTTACGTTTACCTTCATACGGAAGGTGAAAACTCGTCATAACGGGAGGA	300
AAGAGTACGTACAACTTCCGACAGCTCCCGCGGAGGACTTTCCTGAATT	
TCCAGAAATCGTAGAAGGAGGAGAAACACTTTCGGGAAACCTTCTCGTTA	400
ACGGAATAGAAAAGGTAGAGTACGCCATAGCGAAGGAAGAAGCGAACATA	
GCCCTTCAGGGAATGTATCTGAGAGGATACGAGGACAGAATTCACCTTGT	500
GTTTCGGACGGTCACAGGCTTGCACTTTATGAACCTCTACGTAAACATTGA	
AAAGAGTGAAGACGAGTCTTTTGCTTACTTCTCCACTCCCGAGTGGAAC	600
TCGCCGTTAGCTCCTGGAAGGAGAATTCCCGGACTACATGAGTGTCATCC	
CTGAGGAGTTTTTCGGCGGAAGTCTTGTTTGAGACAGAGGAAGTCTTAAAG	700
GTTTTAAAGAGGTTGAAGGCTTTAAGCGAAGGAAAAGTTTTTCCCGTGAA	
GATTACCTTAAGCGAAAACCTTGCCATCTTTGAGTTCGCGGATCCGGAGT	800
TCGGAGAAGCGAGAGAGGAAATTGAAGTGGAGTACACGGGAGAGCCCTTT	
GAGATAGGATTCAACGGAAATACCTTATGGAGGCGCTTGACGCCTACGAC	900
AGCGAAAGAGTGTGGTTCAAGTTCACAACCCCCGACACGGCCACTTTATT	
GGAGGCTGAAGATTACGAAAAGGAACCTTACAAGTGCATAATAATGCCGA	1000
TGAGGGTGTAGCCATGAAAAAAGCTTTAATCTTTTTATTGAGCTTGAGCC	
TTTTAATTCCTGCGTTTAGCGAAGCCAAACCCAAGTCTTC	1090

**FIG. 38**

MRVKVDREELEEVLLKKARESTEKKAALPILANFLLSAKEENLIVRATDLE	
NYLVVSVKGEVEEEGEVVCVHSQKLYDIVKNLNSAYVYLHTEGEKLVITGG	100
KSTYKLPAPAEDEFPEFPEIVEGGETLSGNLLVNGIEKVEYAIKKEEANI	
ALQGMYLRGYEDRIHFVGS DGHRLALYEPLGEFSKELLI PRKSLKVLKKL	200
ITGIEDVNI EKSEDES FAYFSTPEWKLAVRLLEGEFPDYMSVIPEEFSAE	
VL FETEEVLKVLKRLKALSEGKVFVKITLSENLAIFE FADPEFGEAREE	300
IEVEYTGEPFEIGFNGKYLMEALDAYDSERVWFKFTTPDTATLLEAEDYE	
KEPYKCIIMPMRV	363

**FIG. 39**

# REPLACEMENT SHEET

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GTGGAAACCACAATATTCCAGTTCAGAAAACTTTTTTCACAAAACCTCC  
GAAGGAGAGGGTCTTCGTCCTTCATGGAGAAGAGCAGTATCTCATAAGAA 100  
CCTTTTTGTCTAAGCTGAAGGAAAAGTACGGGGAGAATTACACGGTTCTG  
TGGGGGGATGAGATAAGCGAGGAGGAATTCTACACTGCCCTTTCGAGAC 200  
CAGTATATTCGGCGGTTCAAAGGAAAAAGCGGTGGTCATTTACAACCTCG  
GGGATTTTCCTGAAGAAGCTCGGAAGGAAGAAAAAGGAAAAAGAAAGGCTT 300  
ATAAAAGTCCTCAGAAACGTAAAGAGTAACTACGTATTTATAGTGACGA  
TGCGAAACTCCAGAAACAGGAACTTTCTTCGGAACCTCTGAAATCCGTAG 400  
CGTCTTTTCGGCGGTATAGTGGTAGCAAACAGGCTGAGCAAGGAGAGGATA  
AAACAGCTCGTCCTTAAGAAGTTCAAAGAAAAAGGGATAAACGTAGAAAA 500  
CGATGCCCTTGAATACCTTCTCCAGCTCACGGGTACAACTTGATGGAGC  
TCAAACCTTGAGGTTGAAAAACTGATAGATTACGCAAGTGAAAAGAAAATT 600  
TTAACACTCGATGAGGTAAAGAGAGTAGCCTTCTCAGTCTCAGAAAACGT  
AAACGTATTTGAGTTCGTTGATTTACTCCTCTTAAAAGATTACGAAAAGG 700  
CTCTTAAAGTTTTGGACTCCCTCATTTCTTCGGAATACACCCCTCCAG  
ATTATGAAAATCCTGTCCTCCTATGCTCTAAAACCTTACACCCTCAAGAG 800  
GCTTGAAGAGAAGGGAGAGGACCTGAATAAGGCGATGGAAAGCGTGCGAA  
TAAAGAACAACCTTCTCAAGATGAAGTTCAAATCTTACTTAAAGGCAAAC 900  
TCTAAAGAGGACTTGAAGAACCTAATCCTCTCCCTCCAGAGGATAGACGC  
TTTTTCTAACTTTACTTTTCAGGACACAGTGCAGTTGCTGGGGATTTCTT 1000  
GACCTCAAGACTGGAGAGGGAAGTTGTGAAAAATACTTCTCATGGTGGAT  
AATCTTTTTTATGAAGTTTGCGGTTTGCGTTTTTCCCGGTTCT 1093

**FIG. 40**

VETTIFQFQKTFFTKPPKERVFLHGEEQYLIRTFLSKLKEYGENYTVL  
WGDEISEEEFYTALSETSIFGGSKEKAVVIYNFGDFLKKLGRKKKEKERL 100  
IKVLRNVKSNYVFIVYDAKLQKQELSSEPLKSVASF GGIVVANRLSKERI  
KQLVLKKFKEKGINVENDALEYLLQLTGYNLMELKLEVEKLIDYASEKKI 200  
LTLDEVKRVAFSVSENVNVFEFVDLLLLLDYKALKVLDLSLISFGIHLQ  
IMKILSSYALKLYTLKRLEEKGEDLNKAMESVGIKNNFLKMKFKSYLKAN 300  
SKEDLKNLILSLQRIDAFSKLYFQDTVQLLRDFLTSRLEREVVKNTSHGG

**FIG. 41**

# REPLACEMENT SHEET

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ATGGAAAAAGTTTTTTTGGAAAACTCCAGAAAACCTTGCACATACCCGG	
AGGACTCCTTTTTTTTACGGCAAAGAAGGAAGCGGAAAGACGAAAACAGCTT	100
TTGAATTTGCAAAAGGTATTTTTATGTAAGGAAAACGTACCTGGGGATGCG	
GAAGTTGTCCCTCCTGCAAACACGTAAACGAGCTGGAGGAAGCCTTCTTT	200
AAAGGAGAAATAGAA'GACTTTAAAGTTTATAAGACAAGGACGGTAAAAAG	
CACTTCGTTTACCTTATGGGCGAACATCCCGACTTTGTGGTAATAATCCC	300
GAGCGGACATTACATAAAGATAGAACAGATAAGGGAAGTTAAGAAGTTTG	
CCTATGTGAAGCCCCGCACTAAGCAGGAGAAAAGTAATTATAATAGACGAC	400
GCCCACGCGATGACCTCTCAGGCGGCAAACGCTCTTTTAAAGGTATTGGA	
AGAGCCACCTGCGGACACCACCTTTATCTTGACCACGAACAGGCGTTCTG	500
CAATCCTGCCGACTATCCTCTCCAGAAGTTTCAAGTGGAGTTCAAGGGC	
TTTTCAGTAAAAGAGGTTATGGAAATAGCGAAAGTAGACGAGGAAATAGC	600
GAAACTCTCTGGAGGCAGTCTAAAAAGGGCTATCTTACTAAAGGAAAACA	
AAGATATCCTAAACAAAGTAAAGGAATTCTTGGAACGAGCCGTAAAA	700
GTTTACAAGCTTGCAAGTGAATTGCAAAAGTGGGAACCTGAAAAGCAAAA	
ACTCTTCCTTGAAATTATGGAAGAATTGGTATCTCAAAAATTGACCGAAG	800
AGAAAAAAGACAATTACACCTACCTTCTTGATACGATCAGACTCTTTAAA	
GACGGACTCGCAAGGGGTGTAAACGAACCTCTGTGGCTGTTTACGTTAGC	900
CGTTCAGGCGGATTAATAAACCGTTATTGATTCCGTAACATTTAAACCTT	
AATCTAAATTATGAGAGCCTTTGAAGGAGGTCTGGTATGGAAAATTTGAA	1000
GATTAGATATATAGATACGAGGAAGATAGGAACCGTGAGCGGTGTAAAAG	
T	1051

**FIG. 42**

MEKVFLEKLQKTLHIPGGLLFYKGESGKTKTAFEFAGILCKENVPWGC	
GSCPSCKHVNELEEAFFKGEIEDFKVYKDKDGKKHFVYLMGEHPDFVVII	100
PSGHYIKIEQIREVKNFAYVKPALSRRKVIIIDDAHAMTSQAANALLKVL	
EEPPADTTFILTTNRRSAILPTILSRTFQVEFKGFSVKEVMEIAKVDEEI	200
AKLSGGSLKRAILLKENKDILNKVKEFLENEPLKVYKLASEFEKWEPEKQ	
KLFLEIMEELVSQKLTEKKDNYTYLLDTIRLFKDGGLARGVNEPLWLFTL	300
AVQAD	

**FIG. 43**

REPLACEMENT  
SHEET

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ATGAACTTCCTGAAAAAGTTCCTTTTACTGAGAAAAGCTCAAAAGTCTCC	
TTACTTCGAAGAGTTCTACGAAGAAATCGATTTGAACCAGAAGGTGAAAG	100
ATGCAAGGTTTGTAGTTTTTGACTGCGAAGCCACAGAACTCGACGTAAAG	
AAGGCAAAACTCCTTTCAATAGGTGCGGTTGAGGTTAAAAACCTGGAAAT	200
AGACCTCTCTAAATCTTTTTACGAGATACTCAAAAGTGACGAGATAAAGG	
CGGCGGAGATACATGGAATAACCAGGGAAGACGTTGAAAAGTACGGAAAG	300
GAACCAAAGGAAGTAATATACGACTTTCTGAAGTACATAAAGGGAAGCGT	
TCTCGTTGGCTACTACGTGAAGTTTGACGTCTCACTCGTTGAGAAGTACT	400
CCATAAAGTACTTCCAGTATCCAATCATCAACTACAAGTTAGACCTGTTT	
AGTTTCGTGAAGAGAGAGTACCAGAGTGGCAGGAGTCTTGACGACCTTAT	500
GAAGGAACTCGGTGTAGAAATAAGGGCAAGGCACAACGCCCTTGAAGATG	
CCTACATAACCGCTCTTCTTTTCCTAAAGTACGTTTACCCGAACAGGGAG	600
TACAGACTAAAGGATCTCCCGATTTTCCTT	

**FIG. 44**

MNFLKKFLLLRKAQKSPYFEEFYEEIDLNQVKVDARFVVFDCATELDVK	
KAKLLSIGAVEVKNLEIDLKSKSFYEILKSDEIKAAEIHGITREDVEKYGK	100
EPKEVIYDFLKYIKGSVLVGYYVKFDVSLVEKYSIKYFQYPIINYKLDLF	
SFVKREYQSGRSLDDLMKELGVEIRARHNALEDAYITALLFLKYVYPNRE	200
YRLKDLPIFL	

**FIG. 45**



REPLACEMENT  
SHEET

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ATGCTCAATAAGGTTTTTATAATAGGAAGACTTACGGGTGACCCCGTTAT	
AACTTATCTACCGAGCGGAACGCCCGTAGTAGAGTTTACTCTGGCTTACA	100
ACAGAAGGTATAAAAACCAGAACGGTGAATTTTCAGGAGGAAAGTCACTTC	
TTTGACGTAAAGGCGTACGGAAAAATGGCTGAAGACTGGGCTACACGCTT	200
CTCGAAAGGATACCTCGTACTCGTAGAGGGAAGACTCTCCAGGAAAAGT	
GGGAGAAAGAAGGAAAGAAGTTCTCAAAGGTCAGGATAATAGCGGAAAAC	300
GTAAGATTAATAAACAGGCCGAAAGGTGCTGAACTTCAAGCAGAAGAAGA	
GGAGGAAGTTCCTCCCATTGAGGAGGAAATTGAAAACTCGGTAAAGAGG	400
AAGAGAAGCCTTTTACCGATGAAGAGGACGAAATACCTTTTAAATTTTGA	
GGAGGTTAAAGTATGGTAGTGAGAGCTCCTAAGAAGAAAGTTTGTATGTA	500
CTGTGAACAAAAGAGAGAGCCAGATT	

**FIG. 46**

MLNKVFIIGRLTGDPVITYLPSGTPVVEFTLAYNRRYKNQNGEFQEESHF	
FDVKAYGKMAEDWATRFSGYLVLEGRLSQEKWEKEGKKFSKVRIIAEN	100
VRLINRPKGAELOAEVEEVPPIEEEIEKLGKEEEKPFTDEEDEIPF	

**FIG. 47**

# REPLACEMENT SHEET

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ATGCAATTTGTGGATAAACTTCCCTGTGACGAATCCGCCGAGAGGGCGGT	
TCTTGGCAGTATGCTTGAAGACCCCGAAAACATACCTCTGGTACTTGAAT	100
ACCTTAAAGAAGAAGACTTCTGCATAGACGAGCACAAGCTACTTTTCAGG	
GTTCTTACAAACCTCTGGTCCGAGTACGGCAATAAGCTCGATTTCGTATT	200
AATAAAGGATCACCTTGAAAAGAAAACTTACTCCAGAAAATACCTATAG	
ACTGGCTCGAAGAACTCTACGAGGAGGCGGTATCCCCTGACACGCTTGAG	300
GAAGTCTGCAAAATAGTAAAACAACGTTCCGCACAGAGGGCGATAATTCA	
ACTCGGTATAGAACTCATTACAAAAGGAAAGGAAAAACAAAGACTTTTACA	400
CATTAATCGAGGAAGCCCAGAGCAGGATATTTTCCATAGCGGAAAGTGCT	
ACATCTACGCAGTTTTTACCATGTGAAAGACGTTGCGGAAGAAGTTATAGA	500
ACTCATTTATAAATTCAAAGCTCTGACAGGCTAGTCACGGGACTCCCAA	
GCGGTTTACGGAACCTCGATCTAAAGACGACGGGATTCCACCCTGGAGAC	600
TAAATAATACTCGCCGCAAGACCCGGTATGGGGAAAACCGCCTTTATGCT	
CTCCATAATCTACAATCTCGCAAAAGACGAGGGAAAACCCCTCAGCTGTAT	700
TTTCCTTGGAATGAGCAAGGAACAGCTCGTTATGAGACTCCTCTCTATG	
ATGTCGGAGGTCCCACCTTTTCAAGATAAGGTCTGGAAGTATATCGAATGA	800
AGATTTAAAGAAGCTTGAAGCAAGCGCAATAGAACTCGCAAAGTACGACA	
TATACCTCGACGACACACCCGCTCTCACTACAACGGATTTAAGGATAAGG	900
GCAAGAAAGCTCAGAAAGGAAAAGGAAGTTGAGTTTCGTGGCGGTGGACTA	
CTTGCAACTTCTGAGACCGCCAGTCCGAAAGAGTTCAAGACAGGAGGAAG	1000
TGGCAGAGGTTTCAAGAACTTAAAAGCCCTTGCAAAGGAACTTCACATT	
CCCGTTATGGCACTTGCGCAGCTCTCCCGTGAGGTGGAAAAGAGGAGTGA	1100
TAAAAGACCCAGCTTGCGGACCTCAGAGAATCCGGACAGATAGAACAGG	
ACGCAGACCTAATCCTTTTCTCCACAGACCCGAGTACTACAAGAAAAAG	1200
CCAAATCCCGAAGAGCAGGGTATAGCGGAAGTGATAATAGCCAAGCAAAG	
GCAAGGACCCACGGACATTGTGAAGCTCGCATTTATTAAGGAGTACACTA	1300
AGTTTGCAAACCTAGAAGCCCTTCTGAACAACCTCCTGAAGAAGAGGAA	
CTTTCCGAAATTATTGAAACACAGGAGGATGAAGGATTCTGAAGATATTGA	1400
CTTCTGAAAATTAAGGTTTATAATTTTATCTTGGCTATCCGGGGTAGCT	
CAATCGGCAGAGCGGGTGGCTG	1472

**FIG. 48**

MQFVDKLPCEDESAERAUAVLGSMLDPENIPLVLEYLKEEDFCIDEHKLFR	
VLTNLWSEYGNKLDVFLIKDHLEKKNLLQKIPIDWLEELYEEAVSPDTLE	100
EVCKIVKQRSAQRAIIQLGITSTQFYHVKDVAEEVIELIYKFKSSDRLVT	
GLPSGFTELDLKTTFGHPGDLIIILARPGRMGKTAFMLSI IYNLAKDEGKP	200
SAVFSLEMSKEQLVMRLLSMMSEVPLFKIRSGSISNEDLKKLEASAIELA	
KYDIYLDTPALTTTDLRIRARKLRKEKEVEFVAVDYLQLLRPPVRKSSR	300
QEEVAEVSRLKALAKELHIPVMALAQLSREVEKRSDKRPQLADLRESGQ	
IEQDADLILFLHRPEYYKKKPNPEEQGIAEVIIAKQRQGPTDIVKLAFIK	400
EYTKFANLEALPEQPPEEEELSEIIETQEDEGFEDIDF	

**FIG. 49**

# REPLACEMENT SHEET

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ATGTCCTCGGACATAGACGAACTTAGACGGGAAATAGATATAGTAGACGT	
CATTTCCGAATACTTAACTTAGAGAAGGTAGGTTCCAATTACAGAACGA	100
ACTGTCCCTTTTACCCTGACGATACACCCTCCTTTTACGTGTCTCCAAGT	
AAACAAATATTCAAGTGTTTCGGTTGCGGGGTAGGGGGAGACGCGATAAA	200
GTTTCGTTTCCCTTTTACGAGGACATCTCCTATTTTGAAGCCGCCCTTGAAC	
TCGCAAAACGCTACGGAAAGAAATTAGACCTTGAAAAGATATCAAAAGAC	300
GAAAAGGTATACGTGGCTCTTGACAGGGTTTGTGATTTCTACAGGGAAAG	
CCTTCTCAAAAACAGAGAGGCAAGTGAGTACGTAAAGAGTAGGGGAATAG	400
ACCCTAAAGTAGCGAGGAAGTTTGATCTTGGGTACGCACCTTCCAGTGAA	
GCACTCGTAAAAGTCTTAAAAGAGAACGATCTTTTAGAGGCTTACCTTGA	500
AACTAAAAACCTCCTTTCTCCTACGAAGGGTGTTTACAGGGATCTCTTTC	
TTCGGCGTGTCGTGATCCCGATAAAGGATCCGAGGGGAAGAGTTATAGGT	600
TTCGGTGGAAGGAGGATAGTAGAGGACAAATCTCCCAAGTACATAAACTC	
TCCAGACAGCAGGGTATTTAAAAGGGGGGAGAACTTATTCGGTCTTTACG	700
AGGCAAAGGAGTATATAAAGGAAGAAGGATTTGCGATACTTGTGGAAGGG	
TACTTTGACCTTTTGAGACTTTTTTCCGAGGGAATAAGGAACGTTGTTGC	800
ACCCCTCGGTACAGCCCTGACCCAAAATCAGGCAAACCTCCTTTCCAAGT	
TCACAAAAAAGGTCTACATCCTTTACGACGGAGATGATGCGGGAAGAAAG	900
GCTATGAAAAGTGCCATTCCCCTACTCCTCAGTGCAGGAGTGGAAGTTTA	
TCCCGTTTACCTCCCCGAAGGATACGATCCCGACGAGTTTATAAAGGAAT	1000
TCGGGAAAGAGGAATTAAGAAGACTGATAAACAGCTCAGGGGAGCTCTTT	
GAAACGCTCATAAAAACCGCAAGGGAAAACCTTAGAGGAGAAAACGCGTGA	1100
GTTTCAGGTATTATCTGGGCTTTATTTCCGATGGAGTAAGGCGCTTTGCTC	
TGGCTTCGGAGTTTTCACACCAAGTACAAAGTTCCTATGGAAATTTTATTA	1200
ATGAAAATTGAAAAAAATTCTCAAGAAAAAGAAATTAACTCTCCTTTTAA	
GGAAAAAATCTTCCTGAAAGGACTGATAGAATTAAAACCAAAAATAGACC	1300
TTGAAGTCCTGAACTTAAGTCCTGAGTTAAAGGAACTCGCAGTTAACGCC	
TTAAACGGAGAGGAGCATTTACTTCCAAAAGAAGTTCTCGAGTACCAGGT	1400
GGATAACTTGAGAGAACTTTTTAACAACATCCTTAGGGATTTACAAAAAT	
CTGGGAAAAAGAGGAAGAAAAGAGGGTTGAAAAATGTAAATACTTAATTA	1500
ACTTTAATAAATTTTGTAGAGTTAGGA	

**FIG. 50**

MSSDIDELRREIDIVDVISEYLNLEKVGSNYRTNCPFHPDDTPSFYVSPS	
KQIFKCFGCGVGDAIKFVSLYEDISYFEAALELAKRYGKKLDLEKISKD	100
EKVYVALDRVCDFYRESLLKNREASEYVKS RGIDPKVARKFDLGYAPSSE	
ALVKVLKENDLLEAYLETKNLLSPTKGVYRDLFLRRVVIPIKDPRGRVIG	200
FGGRRIVEDKSPKYINSPDSRVFKKGENLFGLYEKEYIKEEGFAILVEG	
YFDLLRRLFSEGIRNVVAPLGTALTQONQLLSKFTKKVYILYDGD DAGRK	300
AMKSAIPLLLSAGVEVYPVYLPEGYDPDEFI KEFGKEELRRLINSSGELF	
ETLIK TARENLEEK TREFRYLGFISDGVRRFALASEFHTKYKVPMEILL	400
MKIEKNSQEKEIKLSFKEKIFLKGLIELPKPIDLEVLNLSPELKE LAVNA	
LNGEEHLLPKEVLEYQVDNLEKLFNNILRDLQKSGKKRKKRGLKNVNT	498

**FIG. 51**

REPLACEMENT  
SHEET

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ATGCAAGATACCGCTACCTGCAGTATTTGTCAGGGGACGGGATTCGTAAA	
GACCGAAGACAACAAGGTAAGGCTCTGCGAATGCAGGTTCAAGAAAAGGG	100
ATGTAAACAGGGAACTAAACATCCCAAAGAGGTACTGGAACGCCAACTTA	
GACACTTACCACCCCAAGAACGTATCCCAAGAACAGGGCACTTTTGACGAT	200
AAGGGTCTTCGTCCACAACCTTCAATCCCGAGGAAGGGAAAGGGCTTACCT	
TTGTAGGATCTCCTGGAGTCGGCAAACTCACCTTGCGGTTGCAACATTA	300
AAAGCGATTTATGAGAAGAAGGGAATCAGAGGATACTTCTTCGATACGAA	
GGATCTAATATTCAGGTTAAAACACTTAATGGACGAGGGAAAGGATACAA	400
AGTTTTTAAAAACTGTCTTAAACTCACCGGTTTTGGTTCTCGACGACCTC	
GGTTCTGAGAGGCTCAGTGACTGGCAGAGGGAATCATCTCTTACATAAT	500
CACTTACAGGTATAACAACCTTAAGAGCACGATAATAACCACGAATTACT	
CACTCCAGAGGGAAGAAGAGAGTAGCGTGAGGATAAGTGCGGATCTTGCA	600
AGCAGACTCGGAGAAAACGTAGTTTCAAAAATTTACGAGATGAACGAGTT	
GCTCGTTATAAAGGGTTCCGACCTCAGGAAGTCTAAAAAGCTATCAACCC	700
CATCT	

**FIG. 52**

MQDTATCSICQGTGFVKTEDNKVRLCECRFKKRDVNRELNIPKRYWNANL	
DTYHPKNVSQNRALLTIRVFVHNFNPEEGKGLTFVGSPGVGKTHLAVATL	100
KAIYEKKGIRGYFFDTKDILIFRLKHLMDGKDTKFLKTVLNSPVLVLDL	
GSERLSDWQRELISYIITYRYNNLKSTIITTNYSLQREEESSVRISADLA	200
SRLGENVVSKIYEMNELLVIKGSDLRKS KKLSTPS	

**FIG. 53**

# REPLACEMENT SHEET

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ATGAAAAAGATTGAAAATTTGAAGTGGAAAAATGTCTCGTTTAAAAGCCT	
GGAAATAGATCCCGATGCAGGTGTGGTTCTCGTTTCCGTGGAAAAATTCT	100
CCGAAGAGATAGAAGACCTTGTGCGTTTACTGGAGAAGAAGACGCGGTTT	
CGAGTCATCGTGAACGGTGTTCAAAAAGTAACGGGGATCTAAGGGGAAA	200
GATACTTTCCCTTCTCAACGGTAATGTGCCTTACATAAAAGATGTTGTTT	
TCGAAGGAAACAGGCTGATTCTGAAAGTGCTTGGAGATTTCGCGCGGGAC	300
AGGATCGCCTCCAAACTCAGAAGCACGAAAAACAGCTCGATGAACTGCT	
GCCTCCCGGAACAGAGATCATGCTGGAGGTTGTGGAGCCTCCGGAAGATC	400
TTTTGAAAAAGGAAGTACCACAACCAGAAAAGAGAGAAGAACCAGGGT	
GAAGAATTGAAGATCGAGGATGAAAACCACATCTTTGGACAGAAACCCAG	500
AAAGATCGTCTTCACCCCTCAAAAATCTTTGAGTACAACAAAAGACAT	
CGGTGAAGGGCAAGATCTTCAAAATAGAGAAGATCGAGGGGAAAAGAACG	600
GTCCTTCTGATTTACCTGACAGACGGAGAAGATTCTCTGATCTGCAAAGT	
CTTCAACGACGTTGAAAAGGTGGAAGGGGAAAGTATCGGTGGGAGACGTGA	700
TCGTTGCCACAGGAGACCTCCTTCTCGAAAACGGGGAGCCCACCTTTAC	
GTGAAGGGAATCACAAAACCTCCCGAAGCGAAAAGGATGGACAAATCTCC	800
GGTTAAGAGGGTGGAGCTCCACGCCCATACCAAGTTCAGCGATCAGGACG	
CAATAACAGATGTGAACGAATATGTGAAACGAGCCAAGGAATGGGGCTTT	900
CCCGCGATAGCCCTCACGGATCATGGGAACGTTTCAGGCCATACCTTACTT	
CTACGACGCGGCGAAAGAAGCTGGAATAAAGCCCATTTCGGTATCGAAG	1000
CGTATCTGGTGAGTGACGTGGAGCCCGTCATAAGGAATCTCTCCGACGAT	
TCGACGTTTGGAGATGCCACGTTTCGTCGTCTCGACTTCGAGACGACGGG	1100
TCTCGACCCGCAAGGTGGATGAGATCATCGAGATAGGAGCGGTGAAGATAC	
AGGGTGGCCAGATAGTGGACGAGTACCACACTCTCATAAAGCCTTCCAGG	1200
GAGATCTCAAGAAAAAGTTCGGAGATCACCGGAATCACTCAAGAGATGCT	
GGAAAACAAGAGAAGCATCGAGGAAGTCTGCCGGAGTTCCTCGGTTTTTC	1300
TGGAAGATTCCATCATCGTAGCACACAACGCCAACTTCGACTACAGATTT	
CTGAGGCTGTGGATCAAAAAAGTGATGGGATTGGACTGGGAAAGACCCTA	1400
CATAGATACGCTCGCCCTCGCAAAGTCCCTTCTCAAACCTGAGAAGCTACT	
CTCTGGATTCCGTTGTGGAAAAGCTCGGATTGGGTCCCTTCCGGCACCAC	1500
AGGGCCCTGGATGACGCGAGGGTCACCGCTCAGGTTTTCTCAGGTTCTGT	
TGAGATGATGAAGAAGATCGGTATCACGAAGCTTTCAGAAATGGAGAAGT	1600
TGAAGGATACGATAGACTACACCGCGTTGAAACCCTTCCACTGCACGATC	
CTCGTTCAGAACAAAAAGGGATTGAAAAACCTATACAAACTGGTTTTCTGA	1700
TTCTATATAAAGTACTTCTACGGTGTTCGAGGATCCTCAAAAGTGAGC	
TCATCGAGAACAGAGAAGGACTGCTCGTGGGTAGCGCGTGTATCTCCGGT	1800
GAGCTCGGACGTGCCGCCCTCGAAGGAGCGAGTGATTTCAGAACTCGAAGA	
GATCGCGAAGTTCTACGACTACATAGAAGTCATGCCGCTCGACGTTATAG	1900
CCGAAGATGAAGAAGACCTAGACAGAGAAAGACTGAAAGAAGTGTACCGA	
AAACTCTACAGAATAGCGAAAAAATTGAACAAGTTCGTCGTCATGACCGG	2000
TGATGTTCAATTTCCCTCGATCCCGAAGATGCCAGGGGCAGAGCTGCACTTC	
TGGCACCTCAGGGAAACAGAACTTCGAGAATCAGCCCGCACTCTACCTC	2100
AGAACGACCGAAGAAATGCTCGAGAAGGCGATAGAGATATTCTGAAGATGA	
AGAGATCGCGAGGGGAAGTCGTGATAGAGAATCCCAACAGAATAGCCGATA	2200
TGATCGAGGAAGTGCAGCCGCTCGAGAAAAAATTCACCCGCCGATCATA	
GAGAACGCCGATGAAATAGTGAGAAACCTCACCATGAAGCGGGCGTACGA	2300
GATCTACGGTGATCCGCTTCCCGAAATCGTCCAGAAGCGTGTGGAAAAGG	

**FIG. 54A**

# REPLACEMENT SHEET

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AACTGAACGCCATCATAAATCATGGATACGCCGTTCTCTATCTCATCGCT	2400
CAGGAGCTCGTTCAGAAATCTATGAGCGATGGTTACGTGGTTGGATCCAG	
AGGATCCGTCGGGTCTTCACTCGTGGCCAATCTCCTCGGAATAACAGAGG	2500
TGAATCCCCCTACCACCACATTACAGGTGTCCAGAGTGCAAATACTTTGAA	
GTTGTCGAAGACGACAGATACGGAGCGGGTTACGACCTTCCCAACAAGAA	2600
CTGTCCAAGATGTGGGGCTCCTCTCAGAAAAGACGGCCACGGCATAACCGT	
TTGAAACGTTTCATGGGGTTCGAGGGTGACAAGGTCCCCGACATAGATCTC	2700
AACTTCTCAGGAGAGTATCAGGAACGTGCTCATCGTTTGTGGAAGAACT	
CTTCGGTAAAGACCACGTCTATAGGGCGGGAACCATAAACACCATCGCGG	2800
AAAGAAGTGCGGTGGGTACGTGAGAAGCTACGAAGAGAAAACCGGAAAG	
AAGCTCAGAAAGGCGGAAATGGAAAGACTCGTTTCCATGATCACGGGAGT	2900
GAAGAGAACGACGGGTCAGCACCCAGGGGGGCTCATGATCATAACCGAAAG	
ACAAAGAAGTCTACGATTTCACTCCCATACAGTATCCAGCCAACGATAGA	3000
AACGCAGGTGTGTTACCCACGCACTTCGCATACGAGACGATCCATGATGA	
CCTGGTGAAGATAGATGCGCTCGGCCACGATGATCCCACTTTTCATCAAGA	3100
TGCTCAAGGACCTCACCGGAATCGATCCCATGACGATTCCCATGGATGAC	
CCCGATACGCTCGCCATATTCAGTTCTGTGAAGCCTCTTGGTGTGGATCC	3200
CGTTGAGCTGGAAAGCGATGTGGGAACGTACGGAATTCGGGAGTTCGGAA	
CCGAGTTTGTGAGGGGAATGCTCGTTGAAACGAGACCAAAGAGTTTCGCC	3300
GAGCTTGTGAGAATCTCAGGACTGTACACGGTACGGACGTCTGGTTGAA	
CAACGCACGTGATTGGATAAACCTCGGCTACGCCAAGCTCTCCGAGGTTA	3400
TCTCGTGTAGGGACGACATCATGAACCTCCTCATAACAAAGGAATGGAA	
CCGTCACTTGCCCTCAAGATCATGGAAAACGTACAGGAAGGGAAAGGTAT	3500
CACAGAAGAGATGGAGAGCGAGATGAGAAGGCTGAAGGTTCCAGAATGGT	
TCATCGAATCCTGTAAAAGGATCAAATATCTCTTCCCGAAAGCTCACGCT	3600
GTGGCTTACGTGAGTATGGCCTTCAGAATTGCTTACTTCAAGGTTCACTA	
TCCTCTTCAGTTTTACGCGGCGTACTTCACGATAAAAGGTGATCAGTTTCG	3700
ATCCGGTTCTCGTACTCAGGGGAAAAGAAGCCATAAAGAGGCGCTTGAGA	
GAACTCAAAGCGATGCCTGCCAAAGACGCCCAGAAGAAAAACGAAGTGAG	3800
TGTTCTGGAGGTTGCCCTGGAAATGATACTGAGAGGTTTTTCCTTCCTAC	
CGCCCGACATCTTCAAATCCGACGCGAAGAAATTTCTGATAGAAGGAAAC	3900
TCGCTGAGAATTCCGTTCAACAACTTCCAGGACTGGGTGACAGCGTTGC	
CGAGTCGATAATCAGAGCCAGGGAAGAAAAGCCGTTCACTTCGGTGGAAG	4000
ATCTCATGAAGAGGACCAAGGTCAACAAAAATCACATAGAGCTGATGAAA	
AGCCTGGGTGTTCTCGGGGACCTTCCAGAGACGGAACAGTTCACGCTTTT	4100

C

**FIG. 54B**

# REPLACEMENT SHEET

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MKKIENLKWKNVSFKSLEIDPDAGVVLVSVEKFSEEIEDLVRLLEKKTRF	
RVIVNGVQKSNGDLRGKILSLLNGNVPYIKDVVFEGNRLILKVLGDFARD	100
RIASKLRSTKKQLDELLPPGTEIMLEVVEPPEDLLKKEVPQPEKREEPKG	
EELKIEDENHIFGQKPRKIVFTPSKIFEYNKKTSVKGKIFKIEKIEGKRT	200
VLLIYLTGDGDSLICKVFNDVEKVEGKVSVDVIVATGDLLLENGEPTLY	
VKGITKLPEAKRMDKSPVKRVELHAHTKFSDQDAITDVNEYVKRAKEWGF	300
PAIALTDHGNVQAIPIFYDAAKEAGIKPIFGIEAYLVSDVEPVIRNLSDD	
STFGDATFVVLDFETTGLDPQVDEIIEIGAVKIQGGQIVDEYHTLIKPSR	400
EISRKSSEITGITQEMLLENKRSIEEVLPEFLGFLEDSIIVAHNANFDYRF	
LRLWIKKVMGLDWERPYPIDTLALAKSLLKLSYSLDSVVEKLGLGPFRHH	500
RALDDARVTAQVFLRFVEMMKIGITKLSEMEKLDKTIDYTALKPFHCTI	
LVQNKGLKNLYKLVSDSYIKYFYGVPRILKSELIENTREGLLVGSACISG	600
ELGRAALEGASDSELEEIAKFYDYIEVMPLDVIAEDEEDLDRERLKEVYR	
KLYRIAKKLNKFVVMTGVDVHFLDPEDARGRAALLAPQGNRNFNENQPALYL	700
RTTEEMLEKAIEIFEDEEIAREVVIENTPNRIADMIEEVQPLEKKLHPPII	
ENADEIVRNLTMKRAYEIIYGDPLPEIVQKRVEKELNAINHGYAVLYLIA	800
QELVQKMSDGYVVGSRGSSLVANLLGITEVNPPLPHYRCPECKYFE	
VVEDDRYGAGYDLPNKNCPRCGAPLRKDGHGIPFETFMGFEGDKVPDIDL	900
NFSGEYQERAHRFVEELFGKDHVYRAGTINTIAERSAVGYVRSYEEKTGK	
KLRKAEMERLVSMITGVKRTTGQHPGGLMIIPKDKEVYDFTPIQYPANDR	1000
NAGVFTTHFAYETIHDDLVKIDALGHDDPTFIKMLKDLTGIDPMTIPMDD	
PDTLAIFSSVKPLGVDPVELESDVGTYGIPEFGTEFVRGMLVETRPKSFA	1100
ELVRISGLSHGTDVWLNWARDWINLGYAKLSEVISCRDDIMNFLIHKGME	
PSLAFKIMENVRKGKGITEEMESEMRRLKVPEWFIESCRIKYLFPKAHA	1200
VAYVSMAFRIAYFKVHYPLQFYAAYFTIKGDQFDPVLVLRGKEAIIKRRLR	
ELKAMPAKDAQKKNEVSVLEVALEMILRGFSFLPPDIFKSDAKKFLIEGN	1300
SLRIPFNKLPGLGDSVAESIIRAREEKPFTSVEDLMKRTKVKNKHIELMK	
SLGVLGDLPETEQFTLF	1367

**FIG. 55**

REPLACEMENT  
SHEET

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GTGCTCGCCATGATATGGAACGACACCGTTTTTTGCGTCGTAGACACAGA	
AACCACGGGAACCGATCCCTTTGCCGGAGACCGGATAGTTGAAATAGCCG	100
CTGTTCCCTGTCTTCAAGGGGAAGATCTACAGAAACAAAGCGTTTCACTCT	
CTCGTGAATCCCAGAATAAGAATCCCTGCGCTGATTCAGAAAGTTCACGG	200
TATCAGCAACATGGACATCGTGGAAGCGCCAGACATGGACACAGTTTACG	
ATCTTTTCAGGGATTACGTGAAGGGAACGGTGCTCGTGTTTCACAACGCC	300
AACTTCGACCTCACTTTTCTGGATATGATGGCAAAGGAAACGGGAACTT	
TCCAATAACGAATCCCTACATCGACACACTCGATCTTTCAGAAGAGATCT	400
TTGGAAGGCCTCATTCTCTCAAATGGCTCTCCGAAAGACTTGGAATAAAA	
ACCACGATACGGCACCGTGCTCTTCCAGATGCCCTGGTGACCGCAAGAGT	500
TTTTGTGAAGCTTGTTGAATTTCTTGGTGAAAACAGGGTCAACGAATTCA	
TACGTGGAAAACGGGGG	567

**FIG. 56**

MLAMIWNDTVFCVVDTETTGTDPFAGDRIVEIAAVPVFKGKIYRNKAFHS	
LVNPRIRIPALIQKVHGISNMDIVEAPDMDTVYDLFRDYVKGTVLVFHNA	100
NFDLTFLDMMAKETGNFPITNPYIDTLDLSEEIFGRPHSLKWLSERLGIK	
TTIRHRALPDALVTARVFVKLVEFLGENRVNEFIRGKRG	189

**FIG. 57**



# REPLACEMENT SHEET

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GTGGAAGTTCTTTACAGGAAGTACAGGCCAAAGACTTTTTCTGAGGTTGT	
CAATCAGGATCATGTGAAGAAGGCAATAATCGGTGCTATTCAGAAGAACA	100
GCGTGGCCACGGATACATATTCGCCGGTCCGAGGGGAACGGGGAAGACT	
ACTCTTGCCAGAATTCTCGCAAATCCCTGAACTGTGAGAACAGAAAGGG	200
AGTTGAACCCTGCAATTCCTGCAGAGCCTGCAGAGAGATAGACGAGGGAA	
CCTTCATGGACGTGATAGAGCTCGACGCGGCCTCCAACAGAGGAATAGAC	300
GAGATCAGAAGAATCAGAGACGCCGTTGGATACAGGCCGATGGAAGGTAA	
ATACAAAGTCTACATAATAGACGAAGTTCACATGCTCACGAAAGAAGCCT	400
TCAACGCGCTCCTCAAAACACTCGAAGAACCCTCCTTCCCACGTCGTGTTT	
GTGCTGGCAACGACAAACCTTGAGAAGGTTCTTCCCACGATTATCTCGAG	500
ATGTCAGGTTTTTCGAGTTCAGAAACATTCCCGACGAGCTCATCGAAAAGA	
GGCTCCAGGAAGTTGCGGAGGCTGAAGGAATAGAGATAGACAGGGAAGCT	600
CTGAGCTTCATCGCAAAAAGAGCCTCTGGAGGCTTGAGAGACGCGCTCAC	
CATGCTCGAGCAGGTGTGGAAGTTCTCGGAAGGAAAGATAGATCTCGAGA	700
CGGTACACAGGGCGCTCGGGTTGATACCGATACAGGTTGTTTCGCGATTAC	
GTGAACGCTATCTTTTCTGGTGATGTGAAAAGGGTCTTACCCTTCTCGA	800
CGACGTCTATTACAGCGGGAAGGACTACGAGGTGCTCATTTCAGGAAGCAG	
TCGAGGATCTGGTCGAAGACCTGGAAGGGGAGAGAGGGGTTTACCAGGTT	900
TCAGCGAACGATATAGTTTCAGGTTTCGAGACAACTTCTGAATCTTCTGAG	
AGAGATAAAGTTCCGCCAAGAAAAACGACTCGTCTGTAAAGTGGGTTCCG	1000
CTTACATAGCGACGAGGTTCTCCACCACAAACGTTTCAGGAAAACGATGTC	
AGAGAAAAAACGATAATTCAAATGTACAGCAGAAAGAAGAGAAGAAAGA	1100
AACGGTGAAGGCAAAAGAAGAAAAACAGGAAGACAGCGAGTTCGAGAAAC	
GCTTCAAAGAACTCATGGAAGAACTGAAAGAAAAGGGCGATCTCTCTATC	1200
TTTGTGCTCTCAGCCTCTCAGAGGTGCAGTTTGACGGAGAAAAGGTGAT	
TATTTCTTTTGATTCATCGAAAGCTATGCATTACGAGTTGATGAAGAAAA	1300
AACTGCCTGAGCTGGAAAACATTTTTTCTAGAAAACTCGGGAAAAAAGTA	
GAAGTTGAACTTCGACTGATGGGAAAAGAAGAAACAATCGAGAAGGTTTC	1400
TCAGAAGATCCTGAGATTGTTTGAACAGGAGGGA	

**FIG. 58**

MEVLYRKYPKTFSEVVNQDHVKKAIIGAIQKNSVAHGYIFAGPRGTGKT	
TLARILAKSLNCENRKGVEPCNSCRACREIDEGTFMDVIELDAASNRGID	100
EIRRIRDAVGYPMEGKYKVYIIDEVHMLTKEAFNALLKTLEPPSHVVF	
VLATTNLEKVPPTIISRCQVFEFRNIPDELIEKRLQEVAAEGIEIDREA	200
LSFIAKRASGGLRDALTMLEQVWKFSEGTKIDLETVHRALGLIPIQVVRDY	
VNAIFSGDVKRFTVLDDVYYSKDYEVLIQEAVEDLVEDLERERGVYQV	300
SANDIVQVSRQLLNLLREIKFAEEKRLVCKVGSAYIATRFSTTNVQENDV	
REKNDNSNVQQKEKKETVKAKEEKQEDSEFEKRFKELMEELKEKGDLSE	400
FVALSLSEVQFDGEKVIISFDSSKAMHYELMKKKLPELENIFSRKLGKKV	
EVELRLMGKEETIEKVSQKILRLFEQEG	478

**FIG. 59**

# REPLACEMENT SHEET

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ATGAAAGTAACCGTCACGACTCTTGAATTGAAAGACAAAATAACCATCGC	
CTCAAAAGCGCTCGCAAAGAAATCCGTGAAACCCATTCTTGCTGGATTTC	100
TTTTTCGAAGTGAAAGATGGAAATTTCTACATCTGCGCGACCGATCTCGAG	
ACCGGAGTCAAAGCAACCGTGAATGCCGCTGAAATCTCCGGTGAGGCACG	200
TTTTGTGGTACCAGGAGATGTCATTGAGAAGATGGTCAAGGTTCTCCCAG	
ATGAGATAACGGAACTTTCTTTAGAGGGGGATGCTCTTGTTATAAGTTCT	300
GGAAGCACCGTTTTTCAGGATCACCACCATGCCCGCGGACGAATTTCCAGA	
GATAACGCCTGCCGAGTCTGGAATAACCTTCGAAGTTGACACTTCGCTCC	400
TCGAGGAAATGGTTGAAAAGGTCATCTTCGCCGCTGCCAAAGACGAGTTC	
ATGCGAAATCTGAATGGAGTTTTCTGGGAACTCCACAAGAATCTTCTCAG	500
GCTGGTTGCAAGTGATGGTTTTCAGACTTGCACTTGCTGAAGAGCAGATAG	
AAAACGAGGAAGAGGCGAGTTTCTTGCTCTCTTTGAAGAGCATGAAAGAA	600
GTTCAAAACGTGCTGGACAACACAACGGAGCCGACTATAACGGTGAGGTA	
CGATGGAAGAAGGGTTTCTCTGTCGACAAATGATGTAGAAACGGTGATGA	700
GAGTGGTTCGACGCTGAATTTCCCGATTACAAAAGGGTGATCCCCGAACT	
TTCAAAACGAAAGTGGTGGTTTCCAGAAAAGAACTCAGGGAATCTTTGAA	800
GAGGGTGATGGTGATTGCCAGCAAGGGAAGCGAGTCCGTGAAGTTCGAAA	
TAGAAGAAAACGTTATGAGACTTGTGAGCAAGAGCCCGGATTATGGAGAA	900
GTGGTCGATGAAGTTGAAGTTCAAAAAGAAGGGGAAGATCTCGTGATCGC	
TTTCAACCCGAAGTTCATCGAGGACGTTTTGAAGCACATTGAGACTGAAG	1000
AAATCGAAATGAACTTCGTTGATTCTACCAGTCCATGTCAGATAAATCCA	
CTCGATATTTCTGGATACCTTTACATAGTGATGCCCATCAGACTGGCA	1098

**FIG. 60**

MKVTVTTLLELKDKITIASKALAKKSVKPILAGFLFEVKDGNFYICATDLE	
TGVKATVNAAEISGEARFVVPGDVIQKMKVLPDEITELSLEGDALVISS	100
GSTVFRITTMPADEFPEITPAESGITFEVDTSLLEEMVEKVIFAAKDEF	
MRNLNGVFWELHKNLLRLVASDGFRLALAEQIENEEEAFLSLKSMKE	200
VQNVLDNTTEPTITVRYDGRRVSLSTNDVETVMRVVDAEFPDYKRVIPET	
FKTKVVVSRKELRESLKRVMVIAASKGSESVKFEIEENVMLVSKSPDYGE	300
VVDEVEVQKEGEDLVIAFNPKFIEDVLKHIETEEIEMNFVDSTSPCQINP	
LDISGYLYIVMPIRLA	366

**FIG. 61**

# REPLACEMENT SHEET

67/83

ATGCCAGTCACGTTTCTCACAGGTACTGCAGAACTCAGAAGGAAGAATT	
GATAAAGAACTCCTGAAGGATGGTAACGTGGAGTACATAAGGATCCATC	100
CGGAGGATCCCGACAAGATCGATTTTCATAAGGTCTTTACTCAGGACAAAG	
ACGATCTTTTCCAACAAGACGATCATTGACATCGTCAATTTTCGATGAGTG	200
GAAAGCACAGGAGCAGAAGCGTCTCGTTGAACTTTTGAAAAACGTACCGG	
AAGACGTTTCATATCTTCATCCGTTCTCAAAAAACAGGTGGAAAGGGAGTA	300
GCGCTGGAGCTTCCGAAGCCATGGGAAACGGACAAGTGGCTTGAGTGGAT	
AGAAAAGCGCTTCAGGGAGAATGGTTTGCTCATCGATAAAGATGCCCTTC	400
AGCTGTTTTTCTCCAAGGTTGGAACGAACGACCTGATCATAGAAAGGGAG	
ATTGAAAAACTGAAAGCTTATTCCGAGGACAGAAAGATAACGGTAGAAGA	500
CGTGGAAGAGGTCGTTTTTACCTATCAGACTCCGGGATACGATGATTTTT	
GCTTTGCTGTTTCCGAAGGAAAAAGGAAGCTCGCTCACTCTCTTCTGTCTG	600
CAGCTGTGGAAGAACACAGAGTCCGTGGTGATTGCCACTGTCCTTGCGAA	
TCACTTCTTGATCTCTTCAAAATCCTCGTTCTTGTGACAAAGAAAAGAT	700
ACTACACCTGGCCTGATGTGTCCAGGGTGTCCAAAGAGCTGGGAATTCCC	
GTTCCCTCGTGTGGCTCGTTTCTCGGTTTCTCCTTTAAGACCTGGAAATT	800
CAAGGTGATGAACCACCTCCTCTACTACGATGTGAAGAAGGTTAGAAAGA	
TACTGAGGGATCTCTACGATCTGGACAGAGCCGTGAAAAGCGAAGAAGAT	900
CCAAAACCGTTCTTCCACGAGTTCATAGAAGAGGTGGCACTGGATGTATA	
TTCTCTTCAGAGAGATGAAGAA	972

**FIG. 62**

MPVTFLTGTAEQKEELIKLLKDGNEVEYIRIHPEDPDKIDFIRSLLRTK	
TIFSNTIIDIVNFDEWKAQEQKRLVELLKNVPEDVHIFIRSQKTGGKGV	100
ALELPKPWETDKWLEWIEKRFRENGLLIDKDALQLFFSKVGTNDLI IERE	
IEKLKAYSEDRKITVEDVEEVVFTYQTPGYDDFCFAVSEGKRKLAHSLLS	200
QLWKTTESVVIATVLANHFLDLFKILVLVTKKRYTWPDVSRVSKELGIP	
VPRVARFLGFSFKTWKFKVMNHLLYYDVKKVRKILRDLYDLDRVAVKSEED	300
PKPFFHEFIEEVALDVYSLQRDEE	

**FIG. 63**

# REPLACEMENT SHEET

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ATGAACGATTTGATCAGAAAGTACGCTAAAGATCAACTGGAACTTTGAA	
AAGGATCATAGAAAAGTCTGAAGGAATATCCATCCTCATAAATGGAGAAG	100
ATCTCTCGTATCCGAGAGAAGTATCCCTTGAACCTCCCGAGTACGTGGAG	
AAATTTCCCCCGAAGGCCTCGGATGTTCTGGAGATAGATCCCGAGGGGGA	200
GAACATAGGCATAGACGACATCAGAACGATAAAGGACTTCCTGAACTACA	
GCCCCGAGCTCTACACGAGAAAGTACGTGATAGTCCACGACTGTGAAAGA	300
ATGACCCAGCAGGCGGCGAACGCGTTTCTGAAGGCCCTTGAAGAACCACC	
AGAATACGCTGTGATCGTTCTGAACACTCGCCGCTGGCATTATCTACTGC	400
CGACGATAAAGAGCCGAGTGTTTCAGAGTGGTTGTGAACGTTCCAAAGGAG	
TTCAGAGATCTCGTGAAAGAGAAAATAGGAGATCTCTGGGAGGAACTTCC	500
ACTTCTTGAGAGAGACTTCAAAACGGCTCTCGAAGCCTACAACTTGGTG	
CGGAAAAAATTTCTGGATTGATGGAAAGTCTCAAAGTTTTTGGAGACGGAA	600
AAACTCTTGAAAAAGGTCCTTTCAAAGGCCTCGAAGGTTATCTCGCATG	
TAGGGAGCTCCTGGAGAGATTTTCAAAGGTGGAATCGAAGGAATTCTTTG	700
CGCTTTTTTGATCAGGTGACTAACACGATAACAGGAAAAGACGCGTTTCTT	
TTGATCCAGAGACTGACAAGAATCATTCTCCACGAAAACACATGGGAAAG	800
CGTTGAAGATCAAAAAAGCGTGTCTTTCCTCGATTCAATTCTCAGGGTGA	
AGATAGCGAATCTGAACAACAACTCACTCTGATGAACATCCTCGCGATA	900
CACAGAGAGAGAAAGAGAGGTGTCAACGCTTGGAGC	

**FIG. 64**

MNDLIRKYAKDQLETLKRIIEKSEGISILINGEDLSYPREVSLELPEYVE	
KFPPKASDVLEIDPEGENIGIDDIRTIKDFLNYSPELYTRKYVIVHDCER	100
MTQQAANAFLEKALEEPPEYAVIVLNTRRWHYLLPTIKSRVFRVVVNPKE	
FRDLVKEKIGDLWEELPLLERDFKTALEAYKLGAEKLSGLMESLKVLETE	200
LLKKVLSKGLEGYLACRELLERFSKVESKEFFALFDQVTNTITGKDAFL	
LIQRLTRIILHENTWESVEDKSVSFLDSILRVKIANLNNKLTLMNILAIH	300
RERKRGVNAWS	

**FIG. 65**

REPLACEMENT  
SHEET

69/83

ATGTCTTTCTTCAACAAGATCATACTCATAGGAAGACTCGTGAGAGATCC  
CGAAGAGAGATACACGCTCAGCGGAACTCCAGTCACCACCTTCACCATAG 100  
CGGTGGACAGGGTTCCCAGAAAGAACGCGCCGGACGACGCTCAAACGACT  
GATTTCTTCAGGATCGTCACCTTTGGAAGACTGGCAGAGTTCGCTAGAAC 200  
CTATCTCACCAAAGGAAGGCTCGTTCTCGTCGAAGGTGAAATGAGAATGA  
GAAGATGGGAAACACCCACTGGAGAAAAGAGGGTATCTCCGGAGGTTGTC 300  
GCAAACGTTGTTAGATTCATGGACAGAAAACCTGCTGAAACAGTTAGCGA  
GACTGAAGAGGAGCTGGAAATACCGGAAGAAGACTTTTCCAGCGATACCT 400  
TCAGTGAAGATGAACCACCATT

**FIG. 66**

MSFFNKIILIGRLVRDPEERYTLSGTPVTTFTIAVDRVPRKNAPDDAQT  
DFFRIVTFGRLAEFARTYLTGRLVLVEGEMRMRWETPTGEKRVSPVV 100  
ANVVRFMDRKPAETVSETEEELEIPEEDFSSDTFSEDEPPF

**FIG. 67**

# REPLACEMENT SHEET

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ATGCGTGTCCCCCGCACAACTTAGAGGCCGAAGTTGCTGTGCTCGGAAG	
CATATTGATAGATCCGTCCGTAATAAACGACGTTCTTGAAATTTTGAGCC	100
ACGAAGATTTCTATCTGAAAAAACACCAACACATCTTCAGAGCGATGGAA	
GAGCTTTACGACGAAGGAAAACCGGTGGACGTGGTTTCCGTCTGTGACAA	200
GCTTCAAAGCATGGGAAAACCTCGAGGAAGTAGGTGGAGATCTGGAAGTGG	
CCCAGCTCGCTGAGGCTGTGCCAGTTCTGCACACGCACTTCACTACGCG	300
GAGATCGTCAAGGAAAAATCCATTCTGAGGAACTCATTGAGATCTCCAG	
AAAAATCTCAGAAAGTGCCTACATGGAAGAAGATGTGGAGATCCTGCTCG	400
ACAACGCAGAAAAGATGATCTTCGAGATCTCAGAGATGAAAACGACAAAA	
TCCTACGATCATCTGAGAGGCATCATGCACCGGGTGTGTTGAAAACCTGGA	500
GAACCTCAGGGAAAGAGCCAACTTATAGAACCCGGTGTGCTCATAACGG	
GACTACCAACGGGATTCAAAGTCTGGACAAACAGACCACAGGGTTCCAC	600
AGCTCCGATCTGGTGATAATAGCAGCGAGACCCCTCCATGGGAAAAACCTC	
CTTCGCACTCTCAATAGCGAGGAACATGGCTGTCAATTTGAAATCCCCG	700
TCGGAATATTCAGTCTCGAGATGTCCAAGGAACAGCTCGCTCAAAGACTA	
CTCAGCATGGAGTCCGGTGTGGATCTTTACAGCATCAGAACAGGATACCT	800
GGATCAGGAGAAGTGGGAAAGACTCACAATAGCGGCTTCTAAACTCTACA	
AAGCACCCATAGTTGTGGACGATGAGTCACTCCTCGATCCGCGATCGTTG	900
AGGGCAAAAGCGAGAAGGATGAAAAAAGAATACGATGTAAAAGCCATTTT	
TGTCGACTATCTCCAGCTCATGCACCTGAAAGGAAGAAAAGAAAGCAGAC	1000
AGCAGGAGATATCCGAGATCTCGAGATCTCTGAAGCTCCTTGCGAGGGAA	
CTCGACATAGTGGTGATAGCGCTTTCACAGCTTTCGAGGGCCGTAGAACA	1100
GAGAGAAGACAAAAGACCGAGGCTGAGTGACCTCAGGGAATCCGGTGCGA	
TAGAACAGGACGCAGACACAGTCATCTTCATCTACAGGGAGGAATATTAC	1200
AGGAGCAAAAAATCCAAAGAGGAAAGCAAGCTTCACGAACCTCACGAAGC	
TGAAATCATAATAGGTAAACAGAGAAACGGTCCCGTTGGAACGATCACTC	1300
TGATCTTCGACCCCAGAACGGTTACGTTCCATGAAGTCGATGTGGTGCAT	
TCA	1353

**FIG. 68**

MRVPPHNLEAEVAVLGSILIDPSVINDVLEILSHEDFYLKKHQHIFRAME	
ELYDEGKPVVDVSVCDKLQSMGKLEEVGGDLEVAQLAEAVPSSAHALHYA	100
EIVKEKSILRKLIIEISRKISESAYMEEDVEILLDNAEKMIFEISEMKTTK	
SYDHLRGIMHRVFENLENFRERANLIEPGVLITGLPTGFKSLDKQTTGFH	200
SSDLVIIAARPSMGKTSFALSIARNMAVNFEIPVGIFSLEMSKEQLAQRL	
LSMESGVDLYSIRTGYLDQEKWERLTIAASKLYKAPIVVDDESLLDPRSL	300
RAKARRMKKEYDVKAIFVDYLQLMHLKGRKESRQQEISEISRSLKLLARE	
LDIVVIALSQLSRAVEQREDKRPRLSDLRESGAIEQDADTVIFIFYREEYY	400
RSKKSKEESKLHEPHEAEIIIGKQRNGPVGTTITLIFDPRTVTFHEVDVH	
S	451

**FIG. 69**

# REPLACEMENT SHEET

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GTGATTCCTCGAGAGGTCATCGAGGAAATAAAAGAAAAGGTTGACATCGT	
AGAGGTCATTTCCGAGTACGTGAATCTTACCCGGGTAGGTTTCCTCCTACA	100
GGGCTCTCTGTCCCTTTCATTTCAGAAACCAATCCTTCTTTCTACGTTTCAT	
CCGGGTTTGAAGATATAACCATTTGTTTCGGCTGCGGTGCGAGTGGAGACGT	200
CATCAAATTTCTTCAAGAAATGGAAGGGATCAGTTTCCAGGAAGCGCTGG	
AAAGACTTGCCAAAAGAGCTGGGATTGATCTTTCTCTCTACAGAACAGAA	300
GGGACTTCTGAATACGGAAAATACATTCGTTTGTACGAAGAAACGTGGAA	
AAGGTACGTCAAAGAGCTGGAGAAATCGAAAGAGGCAAAAGACTATTTAA	400
AAAGCAGAGGGCTTCTCTGAAGAAGATATAGCAAAGTTCGGCTTTGGGTAC	
GTCCCCAAGAGATCCAGCATCTCTATAGAAGTTGCAGAAGGCATGAACAT	500
AACACTGGAAGAACTTGTCAGATACGGTATCGCGCTGAAAAAGGGTGATC	
GATTCGTTGATAGATTCGAAGGAAGAATCGTTGTTCCAATAAAGAACGAC	600
AGTGGTCATATTGTGGCTTTTGGTGGGCGTGCTCTCGGCAACGAAGAACC	
GAAGTATTTGAACTCTCCAGAGACCAGGTATTTTTTCGAAGAAGAAGACCC	700
TTTTTCTCTTCGATGAGGCGAAAAAAGTGGCAAAAGAGGTTGGTTTTTTC	
GTCATCACCGAAGGCTACTTCGACGCGCTCGCATTTCAGAAAGGATGGAAT	800
ACCAACGGCGGTCGCTGTTCTTGGGGCGAGTCTTTCAAGAGAGGCGATTTC	
TAAAACCTTTCGGCGTATTCGAAAAACGTCATACTGTGTTTCGATAATGAC	900
AAAGCAGGCTTCAGAGCCACTCTCAAATCCCTCGAGGATCTCCTAGACTA	
CGAATTCAACGTGCTTGTGGCAACCCCCCTCTCCTTACAAAGACCCAGATG	1000
AACTCTTTCAGAAAGAAGGAGAAGGTTTCATTGAAAAAGATGCTGAAAAAC	
TCGCGTTTCGTTTCGAATATTTTCTGGTGACGGCTGGTGAGGTCTTCTTTGA	1100
CAGGAACAGCCCCGCGGTGTGAGATCCTACCTTTCTTTCCTCAAAGGTT	
GGGTCCAAAAGATGAGAAGGAAAGGATATTTGAAACACATAGAAAATCTC	1200
GTGAATGAGGTTTCATCTTCTCTCCAGATACCAGAAAACCAGATTTTGAA	
CTTTTTTGAAGCGACAGGTCTAACACTATGCCTGTTTCATGAGACCAAGT	1300
CGTCAAAGGTTTACGATGAGGGGAGAGGACTGGCTTATTTGTTTTTGAAC	
TACGAGGATTTGAGGGAAAAGATTCTGGAAGTGGACTTAGAGGTACTGGA	1400
AGATAAAAACGCGAGGGAGTTTTTCAAGAGAGTCTCACTGGGAGAAGATT	
TGAACAAAGTCATAGAAAACCTCCCAAAGAGCTGAAAGACTGGATTTTTT	1500
GAGACAATAGAAAGCATTCCTCCTCCAAAGGATCCCGAGAAATTCCTCGG	
TGACCTCTCCGAAAAGTTGAAAATCCGACGGATAGAGAGACGTATCGCAG	1600
AAATAGATGATATGATAAAGAAAGCTTCAAACGATGAAGAAAGGCGTCTT	
CTTCTCTCTATGAAAGTGATCTCCTCAGAAAAATAAAGAGGAGG	1695

**FIG. 70**

# REPLACEMENT SHEET

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MIPREVIEEIKEKVDIVEVISEYVNLTRVGSSYRALCPFHSETNPSFYVH	
PGLKIYHCFGCGASGDVIKFLQEMEGISFQEALERLAKRAGIDLSLYRTE	100
GTSEYGKYIRLYEETWKRYVKELEKSKEAKDYLSRGFSEEDIAKFGFGY	
VPKRSSISIEVAEGMNITLEELVRYGIALKKGDRFVDRFEGRIVVPIKND	200
SGHIVAFGGRALGNEEPKYLNSPETRYFSKKKTLFLFDEAKKVAKEVGFF	
VITEGYFDALAFRKDGIPTAVAVLGASLSREAILKLSAYSKNVILCFDND	300
KAGFRATLKSLEDLLDYEFNVLVATPSPYKDPDELFOKEGEGSLKKMLKN	
SRSFEYFLVTAGEVFFDRNSPAGVRSYLSFLKGWVQKMRRKGYLKHENL	400
VNEVSSSLQIPENQILNFFESDRSNTMPVHETKSSKVYDEGRGLAYLFLN	
YEDLREKILELDLEVLEDKNAREFFKRVSLGEDLNKVIENFPKELKDWIF	500
ETIESIPPPKDPEKFLGDLSEKLKIRRIERIAEIDDMIKKASNDEERRL	
LLSMKVDLLRKIKRR	565

## FIG. 71

ATGGCTCTACACCCGGCTCACCCCTGGGGCAATAATCGGGCACGAGGCCGT	
TCTCGCCCTCCTTCCCCGCCTCACCGCCAGACCCTGCTCTTCTCCGGCC	100
CCGAGGGGGTGGGGCGGCGCACCGTGCGCCGCTGGTACGCCTGGGGGCTC	
AACCGCGGCTTCCCCCGCCCTCCCTGGGGGAGCACCGGACGTCTCTCGA	200
GGTGGGGCCCAAGGCCCGGGACCTCCGGGGCCGGGCGAGGTGCGGCTGG	
AGGAGGTGGCGCCCCCTCTTGAGTGCTGCCAGCCACCCCGGGAGCGG	300
GTGAAGGTGGCCATCCTGGACTCGGCCCACCTCCTCACCGAGGCCGCGC	
CAACGCCCTCCTCAAGCTCCTGGAGGAGCCCCCTCCTACGCCCGCATCG	400
TCCTCATCGCCCCAAGCCGCGCCACCCTCCTCCCCACCCTGGCCTCCCGG	
GCCACGGAGGTGGCATTCGCCCCCGTGCCCGAGGAGGCCCTGCGCGCCCT	500
CACCCAGGACCCGGAGCTCCTCCGCTACGCCGCGGGGCCCCGGGCGCC	
TCCTTAGGGCCCTCCAGGACCCGGAGGGGTACCGGGCCCGCATGGCCAGG	600
GCGCAAAGGGTCTTGAAAGCCCCGCCCTGGAGCGCCTCGCTTTGCTTCG	
GGAGCTTTTGGCCGAGGAGGAGGGGGTCCACGCCCTCCACGCCGTCTTAA	700
AGCGCCCGGAGCACCTCCTTGCCCTGGAGCGGGCGCGGGAGGCCCTGGAG	
GGGTACGTGAGCCCCGAGCTGGTCCTCGCCCGGCTGGCCTTAGACTTAGA	800
GACA	

## FIG. 72

MALHPAHPGAIIGHEAVLALLPRLTAQTLFSGPEGVGRRTVARWYAWGL	
NRGFPPPSLGEHPDVLEVGPKARDLRGRAEVRLEEVAPLLEWCSSHPRER	100
VKVAILDSAHLLTEAAANALLKLEEPSYARIVLIAPSRATLLPTLASR	
ATEVAFAPVPEEALRALTQDPELLRYAAGAPGRLLRALQDPEGYRARMAR	200
AQRVLKAPPLERLALLRELLAEEEGVHALHAVLKRPEHLLALERAREALE	
GYVSPELVLARLALDLET	268

## FIG. 73



REPLACEMENT  
SHEET

73/83

ATGCTGGACCTGAGGGAGGTGGGGGAGGCGGAGTGGAAGGCCCTAAAGCC	
CCTTTTGGAAGCGTGCCCGAGGGCGTCCCGTCCCTCCTGACCCCTA	100
AGCCAAGCCCCCTCCCGGGCGGCCTTCTACCGGAACCGGGAAAGGCGGGAC	
TTCCCCACCCCCAAGGGGAAGGACCTGGTGCGGCACCTGGAAAACCGGGC	200
CAAGCGCCTGGGGCTCAGGCTCCCGGGCGGGGTGGCCCAGTACCTGGCCT	
CCCTGGAGGGGGACCTCGAGGCCCTGGAGCGGGAGCTGGAGAAGCTTGCC	300
CTCCTCTCCCCACCCCTCACCCCTGGAGAAGGTGGAGAAGGTGGTGGCCCT	
GAGGCCCCCCCCCTCACGGGCTTTGACCTGGTGCGCTCCGTCTTGAGAAGG	400
ACCCCAAGGAGGCCCTCCTGCGCCTAGGCGGCCTCAAGGAGGAGGGGGAG	
GAGCCCCCTCAGGCTCCTCGGGGCCCTCTCCTGGCAGTTCGCCCTCCTCGC	500
CCGGGCCTTCTTCCTCCTCCGGGAAAACCCCAAGGAGGAGGACC	
TCGCCCCGCTCGAGGCCACCCCTACGCCGCCCGCCGCGCCCTGGAGGCG	600
GCGAAGCGCCTCACGGAAGAGGCCCTCAAGGAGGCCCTGGACGCCCTCAT	
GGAGGCGGAAAAGAGGGCCAAGGGGGGGAAAGACCCGTGGCTCGCCCTGG	700
AGGCGGCGGTCTCCGCCTCGCCCGTTGA	

**FIG. 74**

MVIAFTGDPFLAREALLEEARLRGLSRFTEPTPEALAQALAPGLFGGGGA	
MLDLREVGEAEWKALKPLLESVPEGVPVLLDPKPSPSRAAFYRNRERRD	100
FPTPKGKDLVRHLENRAKRLGLRPLPGGVAQYLASLEGDLEALERELEKLA	
LLSPPLTLEKVEKVVALRPPLTGFDLVRVLEKDPKEALLRLGGLKEEGE	200
EPLRLLGALSWQFALLARAFFLLRENPRPKEEDLARLEAHPYAARRALEA	
AKRLTEEALKEALDALMEAEKRAKGKDPWLALEAAVLRRLAR	292

**FIG. 75**

# REPLACEMENT SHEET

74/83

ATGGCTCGAGGCCTGAACCGCGTTTTCTCATCGGCGCCCTCGCCACCCG	
GCCGGACATGCGCTACACCCCGCGGGGCTCGCCATTTTGGACCTGACCC	100
TCGCCGGTCAGGACCTGCTTCTTTCCGATAACGGGGGGGAACCGGAGGTG	
TCCTGGTACCACCGGGTGAGGCTCTTAGGCCGCCAGGCGGAGATGTGGGG	200
CGACCTCTTGGACCAAGGGCAGCTCGTCTTCGTGGAGGGCCGCTGGAGT	
ACCGCCAGTGGGAAAGGGAGGGGGAGAAGCGGAGCGAGCTCCAGATCCGG	300
GCCGACTTCCGGACCCCCTGGACGACCGGGGGAAGAAGCGGGCGGAGGAC	
AGCCGGGGCCAGCCCAGGCTCCGCGCCGCCCTGAACCAGGTCTTCCTCAT	400
GGGCAACCTGACCCGGGACCCGGAACCTCCGCTACACCCCCAGGGCACCG	
CGGTGGCCCGGCTGGGCCTGGCGGTGAACGAGCGCCGCCAGGGGGCGGAG	500
GAGCGCACCCACTTCGTGGAGGTTTTCAGGCCTGGCGCGACCTGGCGGAGTG	
GGCCGCCGAGCTGAGGAAGGGCGACGGCCTTTTCGTGATCGGCAGGTTGG	600
TGAACGACTCCTGGACCAGCTCCAGCGGCGAGCGGCGCTTCCAGACCCGT	
GTGGAGGCCCTCAGGCTGGAGCGCCCCACCCGTGGACCTGCCCAGGCCTG	700
CCCAGGCCGGCGGAACAGGTCCCGCGAAGTCCAGACGGGTGGGGTGGACA	
TTGACGAAGGCTTGAAGACTTTCCGCCGGAGGAGGATTTGCCGTTTTGA	800
GCACGAA	

**FIG. 76**

MARGLNRVFLIGALATRPDMRYTPAGLAILDLTLAQDLLLLSDNGGEPEV	
SWYHRVRLLG RQAEMWGDLLDQGQLVFVEGRLEYRQWEREGEKRSELQIR	100
ADFLDPLDDRGGKKRAEDSRGQPRRLRAALNQVFLMGNLTRDPELRYTPQGT	
AVARLGLAVNERRQGAEERTHFVEVQAWRDLAEWAAELRKGDGLFVIGRL	200
VNDSWTSSSGERRFQTRVEALRLERPTRGPAQACPGRRNRSREVQTGGVD	
IDEGLEDFPPEEDLPF	266

**FIG. 77**

# REPLACEMENT SHEET

75/83

AATTCCGACATTTCAATTGAATCGTTTATTCCGCTTGAAAAAGAAGGCAA	
GTTGCTCGTTGATGTGAAAAGACCGGGGAGCATCGTACTGCAGGCGCGCT	100
TTTTCTCTGAAATCGTGAAAAAAGTCCCGCAACAAACGGTGGAATCGAA	
ACGGAAGACAACCTTTTGGACGATCATCCGCTCGGGGCACTCAGAATTCCG	200
CCTCAATGGGCTAAACGCCGACGAATATCCGCGCCTGCCGCAAATTGAAG	
AAGAAAACGTGTTTCAAATCCCGGCTGATTTATTGAAAACCGTGATTCCG	300
CAAACGGTGTTTCGCCGTTTCTACATCGGAAACGCGCCCAATCTTGACAGG	
TGTCAACTGGAAAGTTGAACATGGCGAGCTTGTCTGCACAGCGACCGACA	400
GTCATCGCTTAGCCATGCGCAAAGTGAAAATTGAGTCGGAAAATGAAGTA	
TCATACAACGTCGTCATCCCTGAAAAAGTCTTAATGAGCTCAGCAAAAT	500
TTTGGATGACGGCAACCACCCGGTGGACATCGTCATGACAGCCAATCAAG	
TGCTATTTAAGGCCGAGCACCTTCTCTTCTTTTCCCGGCTGCTTGACGGC	600
AACTATCCGGAGACGGCCCGCTTGATTCCAACAGAAAGCAAAACGACCAT	
GATCGTCAATGCAAAAGAGTTTCTGCAGGCAATCGACCGAGCGTCCTTGC	700
TTGCTCGAGAAGGAAGGAACAACGTTGTGAAACTGACGACGCTTCCTGGA	
GGAATGCTCGAAATTTCTTCGATTTCTCCGAGATCGGGAAAGTGACGGAG	800
CAGCTGCAAACGGAGTCTCTTGAAGGGGAAGAGTTGAACATTTTCGTTTCA	
CGCGAAATATATGATGGACGCGTTGCGGGCGCTTGATGGAACAGACATTT	900
CAAATCAGCTTCACTGGGGCCATGCGGCCGTTCTGTTGCGCCCGCTTCA	
ACCGATTGATGCTTCAGCTCATTTTGCCGGTGAGAACATAT	992

## FIG. 78

NSDISIIIESFIPLEKEGKLLVDVKRPGSIVLQARFFSEIVKKLPQQTVEI	
ETEDNFLTIIRSGHSEFRLNGLNADEYPRLPQIEEENVFQIPADLLKTVI	100
RQTVFAVSTSETRPILTGWNKVEHGELVCTATDSHRLAMRKVKIIESEN	
EVSYNVVIIPGKSLNELSKIILDDGNHPVDIVMTANQVLFKAHLLFFSRL	200
LDGNYPETARLIPTESKTTMIVNAKEFLQAI DRASLLAREGRNNVVKLTT	
LPGGMLEISSISPEIGKVTEQLQTESLEGEELNISFSAKYMMDALRALDG	300
TDIQISFTGAMRPFLRLRPLHTDSMLQLILPVRTY	

## FIG. 79

REPLACEMENT  
SHEET

76/83

ATGATTAACCGCGTCATTTTGGTCGGCAGGTAAACGAGAGATCCGGAGTT	
GCGTTACACTCCAAGCGGAGTGGCTGTTGCCACGTTTACGCTCGCGGTCA	100
ACCGTCCGTTTACAAATCAGCAGGGCGAGCGGGAAACGGATTTTATTCAA	
TGTGTCGTTTGGCGCCGCCAGGCGGAAAACGTCGCCAACTTTTGAAAAA	200
GGGGAGCTTGGCTGGTGTTCGATGGCCGACTGCAAACCCGCAGCTATGAAA	
ATCAAGAAGGTCGGCGTGTGTACGTGACGGAAGTGGTGGCTGATAGCGTC	300
CAATTTCTTGAGCCGAAAGGAACGAGCGAGCAGCGAGGGGCGACAGCAGG	
CGGCTACTATGGGGATCCATTCCCATTTCGGGCAAGATCAGAACCACCAAT	400
ATCCGAACGAAAAAGGGTTTGGCCGCATCGATGACGATCCTTTCGCCAAT	
GACGGCCAGCCGATCGATATTTCTGATGATGATTTGCCGTTT	492

**FIG. 80**

MINRVILVGRLTRDPELRYTPSGVAVATFTLAVNRPFTNQSYENQEGRRV	
YVTEVVADSVQFLEPKGTSEQRGATAGGYQGERETDFIQCVVWRRQAEN	100
VANFLKKGSLAGVDGRLQTRGDPFPFGQDQNHQYPNEKGFGRIDDDPFAN	
DGQPIDISDDDLPF	164

**FIG. 81**

REPLACEMENT  
SHEET

77/83

ATGCTGGAACGCGTATGGGGAAACATTGAAAAACGGCGTTTTTCTCCCCT	
TTATTTATTATACGGCAATGAGCCGTTTTTATTAACGGAAACGTATGAGC	100
GATTGGTGAACGCAGCGCTTGCCCCGAGGAGCGGGAGTGGAAC TTGGCT	
GTGTACGACTGCGAGGAAACGCCGATCGAGGCGGCGCTTGAGGAGGCCGA	200
GACGGTGCCGTTTTTTCGGCGAGCGGCGTGTCATTCTCATCAAGCATCCAT	
ATTTTTTTACGTCTGAAAAAGAGAAGGAGATCGAACATGATTTGGCGAAG	300
CTGGAGGCGTACTTGAAGGCGCCGTCGCCGTTTTTCGATCGTCGTCTTTTT	
CGCGCCGTACGAGAAGCTTGATGAGCGAAAAAAATTACGAAGCTCGCCA	400
AAGAGCAAAGCGAAGTCGTCATCGCCGCCCGCTCGCCGAAGCGGAGCTG	
CGTGCCTGGGTGCGGCGCCGCATCGAGAGCCAAGGGGCGCAAGCAAGCGA	500
CGAGGCGATTGATGTCCTGTTGCGGCGGGCGGGACGCAGCTTTCGCT	
TGGCGAATGAAATCGATAAATTGGCCCTGTTTGCCGGATCGGGCGGAACC	600
ATCGAGGCGGCGGCGGTTGAGCGGCTTGTCGCCCGCACGCCGGAAGAAAA	
CGTATTTGTGCTTGTCGAGCAAGTGGCGAAGCGCGACATTCCAGCAGCGT	700
TGCAGACGTTTTTATGATCTGCTTGAAAACAATGAAGAGCCGATCAAAATT	
TTGGCGTTGCTCGCCGCCCATTTCCGCTTGCTTTCGCAAGTGAAATGGCT	800
TGCCTCCTTAGGCTACGGACAGGCGCAAATTGCTGCGGCGCTCAAGGTGC	
ACCCGTTCCGCGTCAAGCTCGCTCTTGCTCAAGCGGCCCGCTTCGCTGAC	900
GGAGAGCTTGCTGAGGCGATCAACGAGCTCGCTGACGCCGATTACGAAGT	
GAAAAGCGGGGCGGTGATCGCCGTTGGCCGTTGAGCTGCTTCTGATGC	1000
GCTGGGGCGCCCGCCGGCGCAAGCGGGGCGCCACGGCCGGCGG	

**FIG. 82**

MLERVWGNIEKRRFSPLYLLYGNPFLLTETYERLVNAALGPEEREWNLA	
VYDCEETPIEAALAEAETVPFFGERRVILIKHPYFFTSEKEKEIEHDLAK	100
LEAYLKAPSPFSIVVFFAPYEKLDERKKITKLAKESQEVVIAAPLAEEL	
RAWVRRRIESQGAQASDEAIDVLLRRAGTQLSALANEIDKLALFAGSGGT	200
IEAAAVERLVARTPEENVFVLVEQVAKRDI PAALQTFYDLLENNEPIKI	
LALLAAHFRLLSQVKWLASLGYGQAQIAAALKVHPFRVKLALAQAARFAD	300
GELAEAINELADADYEVKSGAVDRRLAVELLMLRWGARPAQAGRHGR	

**FIG. 83**

REPLACEMENT  
SHEET

78/83

ATGCGATGGGAACAGCTAGCGAAACGCCAGCCGGTGGTGGCGAAAATGCT	
GCAAAGCGGCTTGGA AAAAGGGCGGATTTCTCATGCGTACTTGTTTGAGG	100
GGCAGCGGGGGACGGGCAAAAAGCGGCCAGTTTGTTGTTGGCGAAACGT	
TTGTTTTGTCTGTCCCCAATCGGAGTTTCCCCGTGTCTAGAGTGCCGCAA	200
CTGCCGGCGCATCGACTCCGGCAACCACCCTGACGTCCGGGTGATCGGCC	
CAGATGGAGGATCAATCAAAAAGGAACAAATCGAATGGCTGCAGCAAGAG	300
TTCTCGAAAACAGCGGTTCGAGTCGGATAAAAAAATGTACATCGTTGAGCA	
CGCCGATCAAATGACGACAAGCGCTGCCAACAGCCTTCTGAAATTTTTTG	400
AAGAGCCGCATCCGGGGACGGTGGCGGTATTGCTGACTGAGCAATACCAC	
CGCCTGCTAGGGACGATCGTTTCCCGCTGTCAAGTGCTTTCGTTCCGGCC	500
GTTGCCGCGCGCAGAGCTCGCCCAGGGACTTGTCGAGGAGCACGTGCCGT	
TGCCGTTGGCGCTGTTGGCTGCCCATTTGACAAACAGCTTCGAGGAAGCA	600
CTGGCGCTTGCCAAAGATAGTTGGTTTGCCGAGGCGCGAACATTAGTGCT	
ACAATGGTATGAGATGCTGGGCAAGCCGGAGCTGCAGCTTTTGTTTTTCA	700
TCCACGACCGCTTGTTTCCGCATTTTTTGGAAAGCCATCAGCTTGACCT	
GGACTTG	757

**FIG. 84**

MRWEQLAKRQPVVAKMLQSGLEKGRISHAYLFEGQRTGKKAASLLAKR	
LFCLSPIGVSPCLECRNCRRIDSGNHPDVRVIGPDGGSIKKEQIEWLQQE	100
FSKTAVESDKKMYIVEHADQMTTSAANSLKFLLEPHPGTVAVLLTEQYH	
RLLGTIVSRCQVLSFRPLPPAELAQGLVEEHVPLPLALLAAHLTNSFEEA	200
LALAKDSWF AEARTLVLQWYEMLGKPELQLLFFIHDRLFPHFLESHQLDL	
GL	252

**FIG. 85**

# REPLACEMENT SHEET

79/83

GTGGCATACCAAGCGTTATATCGCGTGTTTCGGCCGCAGCGCTTTGCGGA	
CATGGTCGGCCAAGAACACGTGACCAAGACGTTGCAAAGCGCCCTGCTTC	100
AACATAAAATATCGCACGCTTACTTATTTTCCGGCCCGCGCGGTACAGGA	
AAAACGAGCGCAGCGAAAATTTTCGCCAAGGCGGTCAACTGTGAACAGGC	200
GCCAGCGGCGGAGCCATGCAATGAGTGTCAGCTTGCCTCGGCATTACGA	
ATGGAACGGTTCCCGATGTGCTGGAAATTGACGCTGCTTCCAACAACCGC	300
GTCGATGAAATTCGTGATATCCGTGAGAAGGTGAAATTTGCGCCAACGTC	
GGCCCGCTACAAAGTGTATATCATCGACGAGGTGCATATGCTGTGATCG	400
GTGCGTTTAAACGCGCTGTTGAAAACGTTGGAGGAGCCGCCGAAACACGTC	
ATTTTCATTTTGGCCACGACCGAGCCGCACAAAATTCCGGCGACGATCAT	500
TTCCCGCTGCCAACGGTTCGATTTTCGCCGCATCCCGCTTCAGGCGATCG	
TTTCACGGCTAAAGTACGTCGCAAGCGCCCAAGGTGTCGAGGCGTCAGAT	600
GAGGCATTGTCCGCCATCGCCCGTGCTGCAGACGGGGGGATGCGCGATGC	
GCTCAGCTTGCTTGATCAAGCCATTTCTGTTTACGCGACGGGAACTTCGGC	700
TCGACGACGTGCTGGCGATGACCGGGGCTGCATCATTGCGCCCTTATCG	
AGCTTCATCGAAGCCATCCACCGCAAAGATACAGCGGCGGTTCTTCAGCA	800
CTTGGAACGATGATGGCGCAAGGGAAAGATCCGCATCGTTTGGTTGAAG	
ACTTGATTTTGTACTATCGCGATTTATTGCTGTACAAAACCGCTCCCTAT	900
GTGGAGGGAGCGATTCAAATTGCTGTGCTTGACGAAGCGTTCACTTCACT	
GTCGGAATGATTCCGGTTTCCAATTTATACGAGGCCATCGAGTTGCTGA	1000
ACAAAAGCCAGCAAGAGATGAAGTGGACAAACCACCCGCGCCTTCTGTTG	
GAAGTGGCGCTTGTGAAACTTTGCCATCCATCAGCCGCCGCCCGCTCGCT	1100
GTCGGCTTCCGAGTTGGAACCGTTGATAAAGCGGATTGAAACGCTGGAGG	
CGGAATTGCGGCGCCTGAAGGAACAACCGCCTGCCCTCCGTGACCGCC	1200
GCGCCGGTGAAAAAACTGTCCAAACCGATGAAAACGGGGGGATATAAAGC	
CCCGGTTGGCCGCATTTACGAGCTGTTGAAACAGGCGACGCATGAAGATT	1300
TAGCTTTGGTGAAAGGATGCTGGGCGGATGTGCTCGACACGTTGAAACGG	
CAGCATAAAGTGTGCGCACGCTGCCTTGCTGCAAGAGAGCGAGCCGTTGC	1400
AGCGAGCGCCTCAGCGTTTGTATTAAAATTCAAATACGAAATCCACTGCA	
AAATGGCGACCGATCCCACAAGTTCGGTCAAAGAAAACGTCGAAGCGATT	1500
TTGTTTGAGCTGACAAACCGCCGCTTTGAAATGGTAGCCATTCCGGAGGG	
AGAATGGGGAAAAATAAGAGAAGAGTTCATCCGCAATAAGGACGCCATGG	1600
TGGAAAAAAGCGAAGAAGATCCGTTAATCGCCGAAGCGAAGCGGCTGTTT	
GGCGAAGAGCTGATCGAAATTAAAGAA	1677

**FIG. 86**

REPLACEMENT  
SHEET

80/83

VAYQALYRVFRPQRFADMVGQEHVTKTLQSALLQHKISHAYLFSGPRGTG	
KTSAAKIFAKAVNCEQAPAAEPCNECPACLGITNGTVPDVLEIDAASNRR	100
VDEIRDIREKVKFAPTSARYKVYIIDEVHMLSIGAFNALLKTLEPPKHV	
IFILATTEPHKIPATIIISRCQRFDFRRIPLQAIVSRLKYVASAQGVEASD	200
EALSAIARAADGGMRDALSLDQAISFSDGKLRLDDVLAMTGAASFAALS	
SFIEAIHRKDTAAVLQHLETMMAQGKDPHRLVEDLILYYRDLLLYKTAPY	300
VEGAIQIAVVDEAFTSLSEMIPVSNLYEAIELLNKSQQEMKWTNHPRLLL	
EVALVKLCHPSAAAPSLSASELEPLIKRIETLEAELRRLKEQPPAPPSTA	400
APVKKLSKPMKTGGYKAPVGRIYELLKQATHEDLALVKGCWADVLDTLKR	
QHKVSHAALLQESEPVAASASAFVLKFKYEIHCKMATDPTSSVKENVEAI	500
LFELTNRRFEMVAIPEGEWGKIREEFIRNKDAMVEKSEEDPLIAEAKRLF	
GEELIEIKE	559

**FIG. 87**



# REPLACEMENT SHEET

81/83

ATGGTGACAAAAGAGCAAAAAGAGCGGTTTCTCATCCTGCTTGAGCAGCT	
GAAGATGACGTCGGACGAATGGATGCCGATTTTCGTGAGGCAGCCATTC	100
GCAAAGTCGTGATCGATAAAGAGGAGAAAAGCTGGCATTTTTATTTTCAG	
TTCGACAACGTGCTGCCGGTTCATGTATACAAAACGTTTGCCGATCGGCT	200
GCAGACGGCGTTCCGCCATATCGCCGCCGTCCGCCATACGATGGAGGTCG	
AAGCGCCGCGCGTAAGTGAAGGCGGATGTGCAGGCGTATTGGCCGCTTTGC	300
CTTGCCGAGCTGCAAGAAGGCATGTGCGCGCTTGTCGATTGGCTCAGCCG	
GCAGACGCCTGAGCTGAAAGGAAACAAGCTGCTTGTCGTTGCCCGCCATG	400
AAGCGGAAGCGCTGGCGATCAAACGGCGGTTGCCAAAAAAATCGCTGAT	
GTGTACGCTTCGTTTGGGTTTCCCCCCTTCAGCTTGACGTCAGCGTCGA	500
GCCGTCCAAGCAAGAAATGGAACAGTTTTTGGCGCAAAAACAGCAAGAGG	
ACGAAGAGCGAGCGCTTGCTGTACTGACCGATTTAGCGAGGGAAGAAGAA	600
AAGGCCGCGTCTGCGCCGCCGTCCGGTCCGCTTGTCATCGGCTATCCGAT	
CCGCGACGAGGAGCCGGTGCGGCGGCTTGAAACGATCGTCGAAGAAGAGC	700
GGCGCGTCGTTGTGCAAGGCTATGTATTTGACGCCGAAGTGAGCGAATTA	
AAAAGCGGCCGCACGCTGTTGACCATGAAAATCACAGATTACACGAACTC	800
GATTTTAGTCAAAATGTTCTCGCGCGACAAAGAGGACGCCGAGCTTATGA	
GCGGCGTCAAAAAGGCATGTGGGTGAAAGTGCGCGGCAGCGTGCAAAAC	900
GATACGTTTCGTCCGTGATTTGGTCATCATCGCCAACGATTTGAACGAAAT	
CGCCGCAACGAACGGCAAGATACGGCGCCGGAAGGGGAAAAGAGGGTTCG	1000
AGCTCCATTTGCATACCCCGATGAGCCAAATGGACGCGGTCACCTCGGTG	
ACAAAATCATTGAGCAAGCGAAAAAATGGGGGCATCCGGCGATCGCCGT	1100
CACCGACCATGCCGTTGTTTCAGTCGTTTCCGGAGGCCTACAGCGCGGCGA	
AAAAACACGGCATGAAGGTCATTTACGGCCTTGAGGCGAACATCGTCGAC	1200
GATGGCGTGCCGATCGCCTACAATGAGACGCACCGCCGTCTTTCGGAGGA	
AACGTACGTCGTCTTTGACGTCGAGACGACGGGCCTGTGCGGCTGTGTACA	1300
ATACGATCATTGAGCTGGCGGCGGTGAAAGTGAAAGACGGCGAGATCATC	
GACCGATTTCATGTCGTTTGCCAACCCTGGACATCCGTTGTGCGGTGACAAC	1400
GATGGAGCTGACTGGGATCACCGATGAGATGGTGAAAGACGCCCCGAAGC	
CGGACGAGGTGCTAGCCCGTTTTGTTGACTGGGCGGCGATGCGACGCTT	1500
GTTGCCACACGCCAGCTTTGACATCGGTTTTTTAAACGCGGGCCTCGC	
TCGCATGGGGCGCGGCAAAATCGCGAATCCAGTCATCGATACGCTCGAGC	1600
TGGCCCGTTTTTTTATACCCGGATTTGAAAACCATCGGCTCAATACATTG	
TGCAAAAAATTTGACATTGAATTGACGCAGCATACCGCGCCATCTACGA	1700
CGCGGAGGCGACCGGGCATTTGCTTATGCGGCTGTTGAAGGAAGCGGAAG	
AGCGCGGCATACTGTTTCATGACGAATTAAACAGCCGCACGCACAGCGAA	1800
GCGTCCATATCGGCTTGCGCGCCCGTTCCATGTGACGCTGTTGGCGCAAAA	
CGAGACTGGATTGAAAAATTTGTTCAAGCTTGTCGTCATTGTCGCACATTC	1900
AATATTTTCACCGTGTGCCGCGCATCCCGCGCTCCGTGCTCGTCAAGCAC	
CGCGACGGCCTGCTTGTCGGCTCGGGCTGCGACAAAGGAGAGCTGTTTGA	2000
CAACTTGATCCAAAAGGCGCCGGAAGAAGTCGAAGACATCGCCCGTTTTTT	
ACGATTTTCTTGAAGTGATCCGCCGACGTGTACAAGCCGCTCATCGAG	2100
ATGGATTATGTGAAAGACGAAGAGATGATCAAAAACATCATCCGCAGCAT	
CGTCGCCCTTGGTGAGAAGCTTGACATCCCGGTTGTCGCCACTGGCAACG	2200

**FIG. 88A**

# REPLACEMENT SHEET

82/83

TCCATTACTTGAACCCAGAAGATAAAAATTTACCGGAAAATCTTAATCCAT	
TCGCAAGGCGGGGCGAATCCGCTCAACCGCCATGAACTGCCGGATGTATA	2300
TTTCCGTACGACGAATGAAATGCTTGACTGCTTCTCGTTTTTAGGGCCGG	
AAAAAGCGAAGGAAATCGTCGTTGACAACACGCAAAAAATCGCTTCGTTA	2400
ATCGGCGATGTCAAGCCGATCAAAGATGAGCTGTATACGCCGCGCATTGA	
AGGGGCGGACGAGGAAATCAGGGAAATGAGCTACCGGCGGGCGAAGGAAA	2500
TTTACGGCGACCCGTTGCCGAACTTGTTGAAGAGCGGCTTGAGAAGGAG	
CTAAAAAGCATCATCGGCCATGGCTTTGCCGTCATTTATTTGATCTCGCA	2600
CAAGCTTGTGAAAAAATCGCTCGATGACGGCTACCTTGTCGGGTCGCGCG	
GATCGGTCGGCTCGTCGTTTGTCGCGACGATGACGGAAATCACCGAGGTC	2700
AATCCGCTGCCGCCGCATTACGTTTGCCCGAACTGCAAGCATTCGGAGTT	
CTTTAACGACGGTTCAGTCGGCTCAGGGTTTGATTTGCCGGATAAAAACT	2800
GCCCCGCGATGTGGGACGAAATACAAGAAAGACGGGCACGACATCCCGTTT	
GAGACGTTTCTCGGCTTTAAAGGCGACAAAGTGCCGGATATCGACTTGAA	2900
CTTTTCCGGCGAATACCAGCCGCGCGCCACAACATAACGAAAGTGCTGT	
TTGGCGAAGACAACGTCTACCGCGCCGGGACGATTGGCACGGTCGCTGAC	3000
AAAACGGCGTACGGATTTGTCAAAGCGTATGCGAGCGACCATAACTTAGA	
GCTGCGCGGCGCGGAAATCGACGGCTCGCGGCTGGCTGCACCGGGGTGAA	3100
GCGGACGACCGGGCAGCATCCGGGCGGCATCATCGTCGTCCCGGATTATA	
TGGAAATTTACGATTTTACGCCGATTCAATATCCGGCCGATGACACGTCC	3200
TCTGAATGGCGGACGACCCATTTGACTTCCATTCGATCCACGACAATTT	
GTTGAAGCTCGATATTCTCGGGCACGACGATCCGACGGTCATTTCGCATGC	3300
TGCAAGATTTAAGCGGCATCGATCCGAAAACGATCCCGACCGACGACCCG	
GATGTGATGGGCATTTTTCAGCAGCACCGAGCCGCTTGCGGTTACGCCGGA	3400
GCAAATCATGTGCAATGTCGGCACGATCGGCATTCCGGAGTTTGGCACGC	
GCTTCGTTTCGGCAAATGTTGGAAGAGACAAGGCCAAAAACGTTTTCCGAA	3500
CTCGTGCAAATTTCCGGCTTGTCGCACGGCACCGATGTGTGGCTCGGCAA	
CGCGCAAGAGCTCATTCAAACGGCACGTGTACGTTATCGGAAGTCATCG	3600
GCTGCCGCGACGACATTATGGTCTATTTGATTTACCGCGGGCTCGAGCCG	
TCGCTCGCTTTTAAAATCATGGAATCCGTGCGCAAAGGAAAAGGCTTAAC	3700
GCCGGAGTTTGAAGCAGAAATGCGCAAACATGACGTGCCGGAGTGGTACA	
TCGATTCATGCAAAAAAATCAAGTACATGTTCCCGAAAGCGCACGCCGCC	3800
GCCTACGTGTTAATGGCGGTGCGCATCGCCTACTTTAAGGTGCACCATCC	
GCTTTTGTATTACGCGTCGTACTTTACGGTGCGGGCGGAGGACTTTGACC	3900
TTGACGCCATGATCAAAGGATCACCCGCCATTTCGCAAGCGGATTGAGGAA	
ATCAACGCCAAAGGCATTCAGGCGACGGCGAAAGAAAAAAGCTTGCTCAC	4000
GGTTCCTTGAGGTGGCCTTAGAGATGTGCGAGCGCGGCTTTTCCTTTAAA	
ATATCGATTTGTACCGCTCGCAGGCGACGGAATTTCGTCATTGACGGCAAT	4100
TCTCTCATTCGCCCGTTCAACGCCATTCCGGGGCTTGGGACGAACGTGGC	
GCAGGCGATCGTGCGCGCCCGCGAGGAAGGCGAGTTTTTGTGCAAGGAGG	4200
ATTTGCAACAGCGCGGCAAATTGTGCAAAACGCTGCTCGAGTATCTAGAA	
AGCCGCGGCTGCCTTGACTCGCTTCCAGACCATAACCAGCTGTCGCTGTT	4300

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**FIG. 88B**

# REPLACEMENT SHEET

83/83

MVTKEQKERFLILLEQLKMTSDEWMPHFREAAIRKVVIDKEEKSWHFYFQ	
FDNVLPVHVYKTFADRLQTAFRHIAAVRHTMEVEAPRVTEADVQAYWPLC	100
LAELQEGMSPLVDWLSRQTPELKGNKLLVVARHEAEALAIKRRFAKKIAD	
VYASFGFPPLQLDVSVEPSKQEMEQLAQKQOEDEERALAVLTDLAREEE	200
KAASAPPSGPLVIGYPIRDEEPVRRLETIVEEERRVVVQGYVFD AEVSEL	
KSGRTLTLTKITDYTNSILVKMFSRDKEDAEELMSGVKKGMWVKVRGSVQN	300
DTFVRDLV I IANDLNEIAANERQDTAPEGEKRVELHLHTPMSQMDAVTSV	
TKLIEQAKKWGHPAIAVTDHAVVQSFPEAYSAAKKHGMKVIYGLEANIVD	400
DGVPIAYNETHRRLSEETYVVFVDVETGLSAVYNTI IELAAVKVKDGEI I	
DRFMSFANPGHPLSVTTMELTGITDEMVKDAPKPDEVLARFVDWAGDATL	500
VAHNASFDIGFLNAGLARMGRGKIANPVIDTLELARFLYPDLKNHRLNTL	
CKKFDIELTQHHRAIYDAEATGHLLMRLLKEAEERGILFHDDELNSRTHSE	600
ASYRLARPFHVTL LAQNETGLKNL FKLVSLSHIQYFHRVPRIPRSVLVKH	
RDGLLVGSGCDKGELFDNLIQKAPEEVEDIARFYDFLEVHPPDVYKPLIE	700
MDYVKDEEMIKNI IRSIVALGEKLDIPVATGNVHYLNPEDKIYRKILIH	
SQGGANPLNRHEL PDVYFRTTNEMLD CFSFLGPEKAKEI VVDNTQKIASL	800
IGDVKPIKDELYTPRIEGADEEIREMSYRRAKEIYGDPLPKLVEERLEKE	
LKSIIGHGFAVIYLI SHKLVKKSLDDGYLVGSRGSGVSSFVATMTEITEV	900
NPLPPHYVCPNCKHSEFFNDGSGVSGFDLPDKNCPRCGTTYKKDGHDI PF	
ETFLGFKGDKVPDIDLNFSGEYQ PRAHNYTKVLFGEDNVYRAGTIGTVAD	1000
KTAYGFVKAYASDHNLELRGAEIDLAAGCTGVKRTTGQHPPGGIIVVPDYM	
EIYDFTPIQYPADDTSSSEWRTHFDFHSHIDNLLKLDILGHDDPTVIRML	1100
QDLSGIDPKTIPTDDPDVMGIFSSTEPLGVTPEQIMCNVGTIGIPEFGTR	
FVRQMLEETRPKTFSELVQISGLSHGTDVWLGN AQELIQNGTCTLSEVIG	1200
CRDDIMVYLIYRGLEPSLAFKIMESVRKGKGLTPEFEAEMRKHDVPEWYI	
DSCCKIKYMFPAHAAAYVLM AVRIAYFKVHHPLLYASYFTVRAEDFDL	1300
DAMIKGSPAIRKRIEEINAKGIQATAKEKSLTVLEVALEM CERGF S FKN	
IDLYRSQATEFVIDGNSLI PPFNAIPGLGTNVAQAIVRAREEGEFLSKED	1400
LQQRGKLSKTLLEYLESRGCLDSL PDHNQLSLF	

**FIG. 89**